

Health Policy

Contrast Material Administration by Use of Variable Injection Methods: A Phantom Study of Evaluation of Aortic Peak Enhancement

All Day Location: HP Community, Learning Center

Awards

Certificate of Merit

Participants

Kazuaki Terasawa, Sagano-Shi, Japan (*Presenter*) Nothing to Disclose

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TEACHING POINTS

Contrast-enhanced CT employs a standard uniphasic single-injection method (SIM), wherein administration is based on two parameters: iodine administration rate (mgI/s) and injection duration (s). However, due to the fixed iodine administration rate used in SIMs, only a uniform contrast enhancement can be achieved, and no adjustments can be made to the peak enhancement characteristics in the SIM. Therefore, identification of an optimized contrast method for examination was required. The variable-injection method (VIM) was developed to vary iodine administration in a non-stepwise manner and a variation factor (VF) was used to provide adjustments to the peak enhancement characteristics of TECs.

Pre-procedural Airway Assessment for Radiologists: A Guide for Predicting a Difficult Airway, Knowing When to Consult Anesthesia, and Avoiding the Potential Complications of Moderate Procedural Sedation

All Day Location: HP Community, Learning Center

Participants

Andrew J. Klobuka, MD, Pittsburgh, PA (*Presenter*) Nothing to Disclose

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TEACHING POINTS

Non-anesthesia procedural sedation is a mainstay in performing interventional radiologic procedures. However, procedural sedation by non-anesthesiologists potentially carries with it an increased incidence of harm to the patient compared with sedation by a trained anesthesiologist. This risk is largely avoidable with proper pre-procedural assessment and planning. Understanding how to thoroughly assess a patient's airway as well as being able to recognize the history and physical examination signs of a difficult airway can help radiologists in knowing when to consider an anesthesia consult before respiratory complications arise during a procedure. Recognizing the goals, requirements for, monitoring process thereof, and potential complications of moderate procedural sedation is an important skill set for all radiologists who perform interventional procedures.

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Complications of moderate procedural sedation
Defining a difficult airway
Airway Examination
History
Anatomy
Physical Examination
Mallampati Classification
Thyromental Distance
Atlanto-occipital Extension
3-3-2-1 Rule
ASA Classification
Guidelines on moderate sedation
Requirements
Goals
When to consult anesthesia
Recognizing complications during a procedure
Assessing readiness for discharge from the post-procedural unit

Radiology Education of Physician Extenders: What Role Should Radiologists Play, and What Are the Benefits?

All Day Location: HP Community, Learning Center

Participants

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Benjamin P. Liu, MD, Chicago, IL (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

1. Understand the types of physician extenders (PE) - for example, physician assistant (PA) and radiologist assistant (RA) - and their potential roles in radiology. 2. List pros and cons of educating and/or introducing PE into radiology workflow.

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History and growth of physician extenders as a profession PAs are needed to meet increased demand for healthcare access Nearly 100,000 PAs work nationwide in every medical field Higher-than-average growth of this position is expected at least until 2022 PAs working in primary care or subspecialties routinely order imaging and interpret radiology reports for patients Role of the radiologist in PA education Lectures to PA students at their schools Survey of PA interest in radiology lectures Pre and post-tests of PA understanding of chest, gastrointestinal, genitourinary, neurological imaging Lectures to PAs society meetings Role of PEs working in radiology departments Nonvascular procedures such as paracentesis, thoracentesis, and biopsy Protocoling studies, addressing GFR issues, consenting pregnant patients, and evaluating contrast infiltrations Fluoroscopic procedures Pros and cons of educating and incorporating PAs into the radiology workflow

Quality Control in Nuclear Medicine

All Day Location: HP Community, Learning Center

Participants

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Amjad Ali, MD, Burr Ridge, IL (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

1. To educate the viewers, especially the radiology and Nuclear Medicine residents/fellows about the important QC procedures undergoing on periodic basis in Nuclear medicine. 2. The viewer should understand, interpret these QC tests and take immediate appropriate action to reduce potential wrong clinical inference.

TABLE OF CONTENTS/OUTLINE

QC: Definition, why QC. Components of Instrument Quality Control: 1. Dose Calibrators 2. Survey Meters 3. Standards/reference sources 4. Well Counters 5. Intraoperative Gamma Probe 6. Gamma / SPECT Camera 7. PET Scanner 8. CT scanner of PET-CT or SPECT-CT 9. PET -CT / SPECT-CT image registration Discussion about various daily, weekly, quarterly and annual QC procedures/tests for the above listed equipment with emphasis and effect on the clinical image and interpretation. For example- Field flood, center of rotation, crystal crack, defective photo-multiplier tube, energy peaking, bar phantom and Jaszczak or Carlson phantom etc Conclusion: The QC tests are an important part of the routine work, and sufficient equipment time and staff time must be allocated for routine QC. Deviation from the QC standards alarm to take immediate appropriate action to reduce potential wrong clinical inference.

High Value Body CT Practice: Evidence Based Guidance for Protocol Optimization

All Day Location: HP Community, Learning Center

Participants

Pamela T. Johnson, MD, Baltimore, MD (*Presenter*) Nothing to Disclose
 Adeel Shahid, MD, Baltimore, MD (*Abstract Co-Author*) Nothing to Disclose
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 Rachel B. Thomas, Baltimore, MD (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

The ACR appropriateness criteria define the optimal imaging study for each clinical indication, with body computed tomography (CT) as the primary modality for many clinical presentations. For high value body CT practice, the next level of guidance is evidence-based requirements for how studies are performed. This exhibit reviews the literature guiding protocol design for common body CT indications. By reviewing this exhibit, the reader will learn How protocol design affects diagnostic efficacy in body CT Protocol requirements for high quality body CT examinations based on evidence from literature review

TABLE OF CONTENTS/OUTLINE

Introduction Principles of MDCT protocol design MDCT parameters (detector configuration, reconstruction section, contrast infusion, acquisitions, MPRs, 3D) Protocols Emergency Imaging Acute aorta Pulmonary embolism Appendicitis Renal calculus Pyelonephritis Ischemic bowel Gastrointestinal hemorrhage Small bowel obstruction Inflammatory bowel disease Oncologic imaging Liver (HCC, hemangioma, FNH, adenoma, metastases) Pancreas (adenocarcinoma, PNET) Adrenal (adenoma vs pheochromocytoma) Kidney (RCC, TCC) Breast cancer Gastrointestinal tumors (adenocarcinoma, GIST) Advanced Vascular Imaging Aorta preoperative assessment Aorta s/p endovascular stent repair

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Elliot K. Fishman, MD - 2012 Honored Educator
 Elliot K. Fishman, MD - 2014 Honored Educator
 Atif Zaheer, MD - 2012 Honored Educator

So You Think You Can Scan? A New Approach to Teach Ultrasound Scanning Using CT Fusion and a Web-based Interactive Multimedia Tutorial

All Day Location: HP Community, Learning Center

Participants

Lei Wu, MD, Seattle, WA (*Presenter*) Nothing to Disclose

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Mariam Moshiri, MD, Seattle, WA (*Abstract Co-Author*) Consultant, Reed Elsevier; Author, Reed Elsevier

TEACHING POINTS

1. US is an important tool in radiology and offers the advantage of avoiding ionizing radiation, portability and low cost over CT and MR. Recognizing its importance, ABR requires that radiology residents be competent in performing US exams. In response to this, SRU developed guidelines for resident curriculum in US in 2013.2. Many teaching institutions find it difficult to implement such curriculum due to lack of time and staffing. In addition, there is a general scarcity of available resources for teaching US scanning. The existing resources are limited in their usefulness, and do not take advantage of modern technologies. Based on a recent survey of radiology residents at our institution, most do not feel adequately prepared to perform US exams independently.3. We designed a web-based interactive multimedia teaching module for the RUQ exam. The teaching module consists of US images with clickable anatomic structures, step-by-step video guided tutorial for important anatomic landmarks using still and cine images with suggested probe positioning, and CT fusion images to demonstrate in-plane anatomy and probe position in orthogonal planes.

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Backgrounda.ABR Require competency in US scanningb.SRU curriculumc.Residents unpreparedModulea.Interactive websiteb.Video guided tutorialc.Philosophy of design

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Mariam Moshiri, MD - 2013 Honored Educator

Mariam Moshiri, MD - 2015 Honored Educator

Combating the Risks of Sedentary Behavior in the Reading Room

All Day Location: HP Community, Learning Center

Participants

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TEACHING POINTS

1. Studies have linked sedentary behavior to multiple diseases, including diabetes, hypertension, obesity, and heart disease. As most radiologists who do not perform procedures spend the vast majority of their workday in a seated position, they may be at increased risk, particularly if they do not have a routine exercise program outside of work. 2. Understanding and incorporating the concept of non-exercise activity thermogenesis (NEAT) into the radiologist's work routine can help combat the risks of sedentary behavior. 3. Multiple, easy to incorporate, cost-effective, basic changes to the work routine of radiologists can increase activity to address and avoid these potential health hazards.

TABLE OF CONTENTS/OUTLINE

Describe and provide evidence for the link between sedentary behavior and a number of significant long-term health risks. Explain why most radiologists are at increased risk due to their sedentary work behavior. Define the concept of non-exercise activity thermogenesis (NEAT), and its importance to radiologists. Review proposed solutions, including exercise workstations, and standing while dictating. Review of the relevant literature on this topic. Provide multiple examples of how to burn more calories and increase movement while at work, utilizing the concept of NEAT (while still maintaining appropriate clinical productivity).

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Douglas S. Katz, MD - 2013 Honored Educator

Douglas S. Katz, MD - 2015 Honored Educator

Technical Factors and Settings for a Correct Contrast-enhanced Ultrasound Examination of the Different Organs

All Day Location: HP Community, Learning Center



Discussions may include off-label uses.

Participants

Emilio Quaia, MD, Trieste, Italy (*Presenter*) Nothing to Disclose
Cristina Cercato, Trieste, Italy (*Abstract Co-Author*) Nothing to Disclose
Sara Kus, MD, Trieste, Italy (*Abstract Co-Author*) Nothing to Disclose
Maria A. Cova, MD, Trieste, Italy (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

To understand the basic technical requirements for contrast-enhanced ultrasound examination; To describe the technical factors (transducer frequency, frequency band, convex vs linear array transducer) influencing the quality of contrast-enhanced ultrasound examination; To review all the fundamental technical settings (focal zone, insonation power, etc.) for a correct contrast-enhanced ultrasound examination; To learn how to perform a correct contrast-enhanced ultrasound examination of various organs (liver, spleen, kidneys, and superficial organs) according to the clinical problem to be addressed;

TABLE OF CONTENTS/OUTLINE

Basic physical principles of microbubble contrast agents; Basic principles of microbubble insonation and contrast-specific ultrasound techniques; Technical requirements of the US equipment to perform an informative contrast-enhanced ultrasound examination; Technical parameters to be considered to avoid a suboptimal contrast-enhanced ultrasound examination; Focalization, focal zone(s) position, low acoustic power insonation, pulse repetition frequency, acoustic signal persistence; Technique of contrast-enhanced ultrasound of the liver, kidney, spleen, bowel with emphasis to the transducer (linear vs array), insonation power, and focal zone position;

Quality Improvement and Patient Safety Course for Radiologists

All Day Location: HP Community, Learning Center

Awards

Certificate of Merit

Participants

James Banks, MD, Miami, FL (*Presenter*) Nothing to Disclose

Gary H. Danton, MD, PhD, Miami, FL (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

To be aware of ABR certification requirements for QI knowledge and participation
To understand terminology and concepts needed to design and carry out successful QI projects
To understand how QI methods can help radiology practices achieve 'the triple aim'

TABLE OF CONTENTS/OUTLINE

Background - 'To Err is Human' and beyond - Types of Errors - ACGME Competencies and Milestones - ABR Core Exam Non-Interpretive Skills Requirement - ABR MOC PQI Requirement
The Triple Aim - Improving Outcomes - National Patient Safety Goals in Radiology - Patient-Centeredness
QI Basics - QA - QC6 Sigma
Project Design and Measurement - Characteristics of successful projects - Finding a QI Target - Lean Process Improvement (Toyota Production Model) - SMART Aims and key drivers - Measures and benchmarks
QI Testing and Implementation with PDSA cycles
QI Control and Dissemination - Run charts - Control charts - Dashboards

Going Back to School: Approaches to Effectively Mentor Medical Students Interested in Radiology

All Day Location: HP Community, Learning Center

Awards

Certificate of Merit

Participants

Thomas Wong, BA, Aurora, CO (*Presenter*) Nothing to Disclose

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TEACHING POINTS

A variety of experiences may be available to medical students to gain exposure to radiology, during both the pre-clinical and clinical training years. Multiple resources are available to medical students, however they may not be aware of the full variety of resources available. Practicing academic and private practice radiologists should be aware of the importance of promoting medical student interest in radiology and support mentoring opportunities when they arise.

TABLE OF CONTENTS/OUTLINE

1. Overview of the varied radiology exposure in pre-clinical medical education including literature review A. Incorporation in anatomy lab B. Independent radiology/imaging course C. Extracurricular student involvement in radiology: student interest groups 2. Medical students in national radiology organizations A. ACR B. AUR - AMSER C. RSNA D. Subspecialty Organizations 1. SIR 3. Potential opportunities for practicing radiologist involvement with medical students A. Imaging education 1. Anatomy lectures 2. Dedicated lectures B. Appropriateness of imaging C. Radiation safety D. Radiology research 4. Mentoring a medical student 5. Take-home points/summary

Evaluation of Frequency and Type of Line Malpositions and Associated Complications on Portable Radiographs Identified using Alert Notification of Critical Results (ANCR)

All Day Location: HP Community, Learning Center

Awards

Certificate of Merit

Participants

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Rachna Madan, MD, Boston, MA (*Presenter*) Nothing to Disclose

TEACHING POINTS

1. ANCR alerts are computer generated pages or emails created by the radiologist to inform the clinicians of significant radiologic findings. The primary purpose of ANCR is to ensure notification of significant imaging findings by the radiologist to the clinician and to document communication. A secondary purpose of ANCR data is the ability to review clinical practice. 2. Line malposition may result in significant iatrogenic complications. Awareness of the most common type of line malposition is an important reminder to the radiologist to look carefully at all lines but in particular the devices that most commonly result in malposition.

TABLE OF CONTENTS/OUTLINE

1. Use ANCR data to identify the frequency and type of line malposition in the ICU. 2. Assess factors which may contribute to frequency of misplacements, such as a specific line or tube, time of day, day of the week, and surgical/medical history of the patient. 3. Review both vascular and non-vascular line malpositions. 4. Knowledge of the type of line most likely to be incorrectly positioned or to be associated with a significant iatrogenic outcome alerts the radiologist to carefully evaluate these particular lines. 5. Awareness of hospital practice permits heightened awareness for identification of line malposition by the time of day, and day of week when lines are most likely to be placed.

Radiology. What a Pain in the Back!

All Day Location: HP Community, Learning Center

Participants

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Mustafa Syed, DO, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Nolan J. Kagetsu, MD, New York, NY (*Abstract Co-Author*) Spouse, Employee, Pfizer Inc;

TEACHING POINTS

Teaching points: Radiation safety for patients and radiologists is often the only occupational safety emphasized. Musculoskeletal issues are often the bulk of occupation related health issues among radiologists. These include: -Disk herniations and back pain from poor posture. -Carpal tunnel syndrome from wrist positioning. -Wrist injury from continual use of dictation microphone; including tenosynovitis. -Shoulder/neck pain depending on prior injury and dictation habits. -Cubital tunnel syndrome from poor elbow positioning. -Voice break, vocal fatigue and loss of vocal stamina from continual dictation. -Reduction in range of motion of joints due to reduced physical activity. -Eye health: eye strain, dry eye, headaches, and development of myopia. -Poor diet (eating quickly at the desk) and reduced activity compared to other professions which can result in obesity, diabetes and other disease in predisposed individuals. -Effect on sleep cycle/nocturnal rhythm due to exposure to monitor lighting.

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Review of common musculoskeletal among the radiologists. Review the potential solutions to reduce the injury. Evaluation of our preliminary results from a survey of the residents and the radiologists at our institution.

Global Health: Improving Early Detection of Breast Cancer in Rural Areas. From Community Education to Ultrasound Exams, A Model for Reducing Barriers to Breast Care

All Day Location: HP Community, Learning Center

Awards

Certificate of Merit

Participants

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Kyungmin Kang, MD, Iowa City, IA (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

Evaluation of breast pathology can be tailored to rural areas with low availability of technological and human resources. Physicians without prior radiology training can be taught ultrasound to evaluate breast masses and perform biopsies. Building partnerships with local health care systems is key to maximize educational outreach. A longitudinal global health experience before the final year of radiology training allows residents to broaden their perspective and achieve higher levels of competency in the core areas of ACGME training.

TABLE OF CONTENTS/OUTLINE

- Introduction to model for improving early breast cancer detection based on 3 years of collaboration between a U.S. based healthcare non-profit, residents in training, and local health care organizations in Nicaragua.
- Review of medical imaging's role in early detection, and pertinent socio-cultural barriers.
- Outline of our outreach model: Education to midlevel providers involved in providing primary care to women. Training general practitioners and surgeons to perform focused ultrasound exams and core needle biopsies of palpable breast masses. Model curriculum for local practitioners in low-resource settings, including the introduction of BI-RADS reporting for ultrasound, structured case conferences, and low cost breast phantom models for teaching biopsies in a zero-risk setting.

How to Set Up ABR Core Curriculum Cases for Daily Resident Teaching

All Day Location: HP Community, Learning Center

Participants

Pauley T. Gasparis, MD, Indianapolis, IN (*Abstract Co-Author*) Nothing to Disclose

Kumaresan Sandrasegaran, MD, Carmel, IN (*Presenter*) Nothing to Disclose

Darel E. Heitkamp, MD, Indianapolis, IN (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

Since the fall of 2014, the abdominal radiology section has created a database of 100 cases covering all of the gastrointestinal (GI) and genitourinary (GU) system ABR core curriculum. To discuss how this curriculum may be developed. To discuss how to fit the teaching of this curriculum in a busy clinical service. To assess how daily case-based teaching of abdominal radiology curriculum improves resident performance.

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What is the ABR core curriculum, with particular reference to the GU system How to select important teaching points from this core curriculum Do's and don'ts of writing ABR-type MCQ questions Illustrative cases How to integrate this case-based teaching in a busy clinical service Resident feedback for this educational program

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Kumaresan Sandrasegaran, MD - 2013 Honored Educator

Kumaresan Sandrasegaran, MD - 2014 Honored Educator

Radiology Resident Recruitment in a Buyers' Market: A Survey of Institutional Strategies, Costs and Procedures

All Day Location: HP Community, Learning Center

Participants

Danielle S. Williams, MSc, BSC, MD, Valhalla, NY (*Presenter*) Nothing to Disclose

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Perry S. Gerard, MD, Valhalla, NY (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

The purpose of the exhibit is to:• Review data regarding decline in radiology interest among medical students. • To assess current spending habits of radiology residency programs in candidate recruitment efforts. • To evaluate trends in recruitment costs, calculate the average per interviewee spending, and analyze efforts to attract radiology residency candidates in a declining radiology job market.

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• The total number of applications received, interviews offered and conducted in community-based, university-affiliated residency programs • Survey of residency match trends from 2000-2015 • Cost of recruitment for the interview season per interviewee • Current methods of improving applicant recruitment efforts (pre-interview dinner/happy hour, complimentary parking, program paraphernalia, etc) • Conclusion: Despite downward trend in number of applicants, the number of residency interviews conducted has remained stable in the majority of programs surveyed, suggesting a relaxation of standards in applicant selection for interview. Despite this, the number of unfilled programs continues to rise. In the 2015 Match, 55 of 166 (33.1%) programs went unfilled, an 1100% increase over the point of peak competitiveness. This suggests that if the number of interviewees does not increase in subsequent matches there is a risk of ongoing match failure.

Mentoring Quiz: How Effective are Your Mentoring Relationships?

All Day Location: HP Community, Learning Center

Participants

Vibhor Wadhwa, MBBS, Little Rock, AR (*Presenter*) Nothing to Disclose
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Cindy S. Lee, MD, San Francisco, CA (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

Mentoring is a critical component of career and personal development for all radiologists. However, mentoring is often undervalued, time consuming and requires a mutually satisfactory interpersonal relationship. Learn the barriers to successful mentoring and gain knowledge of practical suggestions on how to improve your mentoring relationship. Take the Mentoring Quiz to find out how effective your mentoring relationships are and receive suggestions for improvement.

TABLE OF CONTENTS/OUTLINE

1. Why is mentoring important to radiologists?
2. Characteristics of an effective mentor (the 3 C's) Confidence Competence Commitment
3. Barriers and how to choose the right mentor? Commitments Expectations Checklist for mentors and mentees
4. Four phases of the mentoring relationship: Initiation Cultivation Separation Redefinition
5. The Mentoring Quiz How effective are your mentoring relationships? Strategies for improvement

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Paul G. Nagy, PhD - 2014 Honored Educator

Better to Give than to Receive? Strategies for Providing Constructive Feedback to Residents

All Day Location: HP Community, Learning Center

Participants

Judah Burns, MD, Bronx, NY (*Presenter*) Nothing to Disclose

Orli Haken, Bronx, NY (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

Teaching Points: 1. Educators need to recognize the difference between giving advice and feedback on resident performance. 2. Helping teachers learn to frame feedback properly enables students to act on feedback and further develop their own skills and abilities.

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This presentation will make use of case examples to better define feedback in the context of resident performance. Framework examples will be used to highlight classic tools and pitfalls often encountered in educational settings, which can be used to help improve the process of giving feedback and enhance resident education. A. Case study B. What is feedback? Feedback vs. advice Feedback vs. evaluation Review of case study C. Common "Do's and Don'ts" of Giving Feedback Do: Ask permission to give feedback Be timely (though not instant) Make feedback on ongoing effort (ie. regular "checkups") Use specific examples Target actionable outcomes Co-develop a plan for improvement ("goal referencing") Don't: Avoid the "Feedback Sandwich" Don't sugarcoat negative feedback Less teaching, more feedback

Do I Need a Lawyer? Demystifying the ABR Audit

All Day Location: HP Community, Learning Center

Participants

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TEACHING POINTS

In 2012, the American Board of Radiology adopted a continuous certification process for diplomates to maintain certification. Rather than a cycling process, where for example every 10 years, one will be up for recertification, the ABR will monitor its membership on an annual basis. In addition, the ABR will now perform 'random' audits on a select group of its members annually. The purpose of this presentation is to provide: (1) a clear understanding of the new rules, (2) an overview of the auditing process, and (3) tools to prepare for potential audits.

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-Objectives-ABR MOC Continuous Certification process overview-The "Random" Audit-Elements involved in an Audit-Preparation for survival-Summary-Take Home Points

More Complicated than Your Taxes?: How to Look at Numbers in the New IR Residency without an Accountant

All Day Location: HP Community, Learning Center

Participants

Kerim Karaoglu, MD, Madison, WI (*Presenter*) Nothing to Disclose

Michael C. Brunner, MD, Madison, WI (*Abstract Co-Author*) Nothing to Disclose

Orhan S. Ozkan, MD, Madison, AL (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

The purpose of this exhibit is to provide a tool: 1. To recognize upcoming IR residency impact on DR and IR programs 2. To illustrate with examples if shifting some residency slots from DR to integrated IR would reduce the number of available residents for non-IR rotations 3. To demonstrate how Integrated IR / Independent IR programs coexist 4. To map the complex scenarios that can result from the new system and define the optimal numbers for training, clinical service and finance

TABLE OF CONTENTS/OUTLINE

Upcoming changes in IR residency will be presented with examples in both number of rotations, FTE residents for each year, funded positions per each year...A. IR Residency a. Integrated vs Independent b. Number of rotations in DR/IR for each year B. Effects of yearly change a. Shifting a residency slot from DR to Integrated IR b. Yearly comparisons of number of available FTE residents in DR/IR c. Number of residents allowed to choose ESIR pathway d. Post-ESIR vs DR graduate pathways for independent IR residency C. Negotiations with DIO a. Will funded positions/year increase? D. Explanation of an excel application which will be open to the public, to better understand each institution's unique situation E. Examples from our residency program F. Open session for interested attendees to try their own program scenarios.

'Nearpod' Online Teaching Tool: A Practical Guide to Using 'Nearpod' to Deliver Interactive Teaching Sessions for Radiology Education

All Day Location: HP Community, Learning Center

Participants

Nabeel I. Sarwani, MD, Hummelstown, PA (*Presenter*) Nothing to Disclose

TEACHING POINTS

Demonstrate how to create a web based, platform agnostic teaching module using 'Nearpod', to provide image rich, interactive content in the delivery of educational material catering to radiology. Understand how to use 'Nearpod' during an actual educational session as an instructor, and how to interact with its interface. Review best practices learned from using this application

TABLE OF CONTENTS/OUTLINE

Overview of what Nearpod is Review the different parts of the interface Importing existing content from Powerpoint, PDFs, etc Creating interactivity Quiz Poll Draw Open ended question Web search/ distributing web content Limitations How to use Nearpod during a class Educational techniques, such as flipped classroom Navigating your created content Using real-time audience response to guide your content, identify learning gaps, and emphasizing teaching points Using the 'results' form to monitor class performance and feedback Best practices - lessons learned

The Physics Behind MRI Induced Burns

All Day Location: HP Community, Learning Center



Discussions may include off-label uses.

Participants

Silvia Hidalgo-Tobon, PhD, Mexico City, Mexico (*Presenter*) Nothing to Disclose

Estefania Reyes, DF, Mexico (*Abstract Co-Author*) Nothing to Disclose

Leonardo Medel, BS, DF, Mexico (*Abstract Co-Author*) Nothing to Disclose

Pavel Oropeza, BA, DF, Mexico (*Abstract Co-Author*) Nothing to Disclose

Benito De Celis IV, Puebla, Mexico (*Abstract Co-Author*) Nothing to Disclose

Pilar Dies-Suarez, MD, Mexico City, Mexico (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

Explain the physics behind MRI burns. Evaluate the safety procedure to avoid burns due to use damaged RF coils, physiologic monitors, external conductive-accessories and pulse oximeter. Explain the process of thermal burns, from induced electric field, current, and heating.

TABLE OF CONTENTS/OUTLINE

A) MRI Instrumentation B) External Instrumentation : pulse oximeter, physiologic monitors, electronically-activated devices. C) Variation of magnetic field on time: RF pulses. D) MRI induced heating mechanism E) Recommendations to prevent excessive heating and possible burns in association with MR procedures.

Debunking Common Misconceptions Regarding Iodinated Contrast Administration: A Historical Perspective, Review of Current Guidelines and Use in Special Situations.

All Day Location: HP Community, Learning Center

Participants

Ivan Babin, MD, Syracuse, NY (*Presenter*) Nothing to Disclose

Michael-Isaac Walshon, Syracuse, NY (*Abstract Co-Author*) Nothing to Disclose

Abraham F. Salinas, MD, Syracuse, NY (*Abstract Co-Author*) Nothing to Disclose

Andrij R. Wojtowycz, MD, Syracuse, NY (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

Intravenous iodinated contrast allergy and renal injury rates have diminished significantly with the transition from high osmolar ionic contrast media (HOICM) to low-osmolar contrast media (LOICM) and iso-osmolar contrast media (IOICM). Yet many practitioners overestimate the risks associated with LOICM administration resulting in suboptimal diagnostic studies. We will discuss the complication rates associated with iodinated contrast administration, common misconceptions regarding allergic reactions and renal injury, and take a closer look at its association with permanent kidney damage. We will discuss strategies to treat and prevent adverse reactions, and explore special situations regarding contrast administration.

TABLE OF CONTENTS/OUTLINE

Historical overview, molecular structures, properties, and complication rates of various iodinated contrast medias Common misconceptions about allergic vs. allergic-like reactions, and their relationships to other allergies Categorization of acute reactions and subsequent treatment guidelines Mechanisms and rates of renal injury, stratified by renal function. A close look at the available data on permanent kidney damage with the use of LOICM and IOICM will be examined Protocols to minimize chances of renal damage Special circumstances including diabetic, pregnant, pediatric, and renal transplant patients

Nine Habits of Highly Effective Radiologists

All Day Location: HP Community, Learning Center

Participants

Tim I. Alves, MD, Ann Arbor, MI (*Presenter*) Nothing to Disclose
Girish Gandikota, MBBS, Ann Arbor, MI (*Abstract Co-Author*) Nothing to Disclose
Monica Kalume Brigido, MD, Ann Arbor, MI (*Abstract Co-Author*) Nothing to Disclose
Corrie M. Yablon, MD, Ann Arbor, MI (*Abstract Co-Author*) Nothing to Disclose
David A. Jamadar, MBBS, Ann Arbor, MI (*Abstract Co-Author*) Nothing to Disclose
David P. Fessell, MD, Ann Arbor, MI (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

Adapting effectiveness principles from the world of business and personal development can help radiologists achieve professional success. Stephen R. Covey's eight habits of highly effective people (and our proposed ninth habit) focus on timeless principles to achieve personal and interpersonal effectiveness and mastery, and can be easily adapted to radiology. Energy management focuses on managing how energy is expended, rather than managing time. This new paradigm can help the busy radiologist decide how to best spend his/her energy. The concept of renewal encourages an introspective focus to channel one's inner passion and improve relationships, helping the radiologist foster a sense of meaning in one's work. Mindfulness techniques can help the radiologist manage a stressful job and lessen the risk of burnout.

TABLE OF CONTENTS/OUTLINE

-What can we learn from the effectiveness field?-Covey's effectiveness principles -The eight habits -Our proposed ninth habit- Energy Management -Energy management vs time management -Hierarchy of energy-Renewal -Concept of renewal and the Circle of Trust-Mindfulness -Benefits of a mindful approach to radiology-Summary - Keys to a successful and meaningful career: Know yourself, know your goals, and know the principles and practices that nurture success

Oops We Imaged a Pregnant Person: What Happens Next?

All Day Location: HP Community, Learning Center

Participants

Mark Welnick, MD, Pittsburgh, PA (*Presenter*) Nothing to Disclose

Matthew S. Hartman, MD, Pittsburgh, PA (*Abstract Co-Author*) Nothing to Disclose

Margaret E. Blackwood, MS, Pittsburgh, PA (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

Review pregnancy screening criteria and situations where pregnancy can be missed. Know how to estimate risk to the fetus based on exam modality and anatomic region imaged. Provide framework for who needs to be notified, who communicates with the patient, and what needs to be communicated to patient.

TABLE OF CONTENTS/OUTLINE

Review ACR screening guidelines What are the risks to fetus related to; Gestation MRI vs CT Contrast vs non-contrast Radiation dose Who needs to be notified Patient Medical physics Substantial risk exam where dose calculation needs to be made. Ordering provider PCP Patient notification ED vs outpatient What is communicated Fetal risk What do they need to do next Prenatal care

Automating Radiology Quality and Efficiency Measures with Natural Language Processing

All Day Location: HP Community, Learning Center

Participants

Martin L. Gunn, MBChB, Seattle, WA (*Presenter*) Research support, Koninklijke Philips NV; Spouse, Consultant, Wolters Kluwer NV; Medical Advisor, TransformativeMed, Inc;

Meliha Yetisgen, PhD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose

Bruce E. Lehnert, MD, Seattle, WA (*Abstract Co-Author*) Research support, Koninklijke Philips NV

Karen Trovato, PhD, Briarcliff Manor, NY (*Abstract Co-Author*) Employee, Koninklijke Philips NV

Christopher Hall, PhD, Briarcliff Manor, NY (*Abstract Co-Author*) Employee, Koninklijke Philips NV

Sandeep Dalal, Briarcliff Manor, NY (*Abstract Co-Author*) Employee, Koninklijke Philips NV

Gabriel Mankovich, BSC, Briarcliff Manor, NY (*Abstract Co-Author*) Employee, Koninklijke Philips NV

Norman J. Beauchamp JR, MD, Seattle, WA (*Abstract Co-Author*) Research Grant, Koninklijke Philips NV

TEACHING POINTS

After completing this exhibit, the viewer should: Understand automated techniques for quality and process improvement using data extracted from radiology reports. Know how to: Apply natural language processing to measure, dashboard, and evaluate quality and process improvement variables in an automated way Implement strategies to improve radiology report quality Use NLP tools in a system for continuous monitoring and improvement in a radiology department

TABLE OF CONTENTS/OUTLINE

Following and brief introduction, the exhibit focuses on practical applications of text mining in radiology practice management, illustrating them with use-case examples. Introduction: Mining data from radiology reports. Why mine quality and operational data from radiology reports? How to access data embedded in radiology reports. Natural language processing methods. Applications of NLP for practice improvement. Quality improvement: Follow-up tracking, critical results reporting, detection of reports describing reduced image quality, diagnostic uncertainty/hedging, report errors. Clinical practice (Case example: pneumonia detection). Operational improvement (Case example: variability in recommendation rates). Integrating data extracted from free-text reports with data from the RIS and PACS: Quality dashboard.

Understanding the Chargemaster and Its Role in Radiology

All Day Location: HP Community, Learning Center

Participants

Wenshuai Wan, MD, MS, Philadelphia, PA (*Presenter*) Nothing to Disclose

Jason N. Itri, MD, PhD, Cincinnati, OH (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

The purpose of this exhibit is: 1. To understand various hospital-based reimbursement models for imaging studies and procedures 2. To gain an awareness of the origins, function, and evolution of the chargemaster in the modern US health care environment 3. To explore the consequences and implications of chargemaster for radiology as a specialty

TABLE OF CONTENTS/OUTLINE

1. Review history of hospital-based radiology study and procedure reimbursement origins in fee for service payment transition to indemnity model of health care insurance evolution of the chargemaster as an actuarial and financial instrument 2. Chargemaster contents of a chargemaster data on variability in chargemaster billing medically related and non-medically related reasons for variability 3. Impact on health care in the US specific policy changes impacting reimbursement for radiology studies and procedures effects of chargemaster on patients with various forms of insurance, including government-based, commercial, and self-pay 4. What does this mean for radiology? pros and cons of how chargemaster prices can impact radiology examples of how chargemaster may change medical decision-making for both patients and radiologists impact on our patients and how we can respond as physician leaders

An Analysis into NHS Litigation Authority Claims in Relation to Radiology between 1995 and 2014: Are There Lessons to be Learnt?

All Day Location: HP Community, Learning Center

Participants

Oliver Hulson, MBChB, Leeds, United Kingdom (*Presenter*) Nothing to Disclose

Neal Larkman, MBBS, Leeds, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

Jon Smith, FRCR, Leeds, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

To be aware of common areas of claims against diagnostic radiology in the UK National Health Service. To be aware of interventional procedures that are prone to litigation and how to reduce the chance of litigation.

TABLE OF CONTENTS/OUTLINE

History of the NHS Litigation Authority Background of litigation claims in the NHS An analysis of claims against radiology

overall Subsection: Claims related to a missed or delayed diagnosis of cancer Subsection: Injury within the radiology

department Subsection: Contrast medium related claims Subsection: Interventional radiology claims Summary and learning points

How to Evaluate/Manage Patient Temperature in Real-time during Magnetic Resonance Imaging

All Day Location: HP Community, Learning Center



Discussions may include off-label uses.

Participants

Tatsuo Nagasaka, RT, Sendai, Japan (*Presenter*) Nothing to Disclose

Koichi Chida, PhD, Sendai, Japan (*Abstract Co-Author*) Nothing to Disclose

Isao Yanagawa, Sendai, Japan (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

-To understand the necessity of real-time measurement of temperature during MRI examination, to accurately evaluate increases in temperature with specific absorption rate (SAR), especially 3T-MRI -To determine the temperature rise caused by SAR with RF pulse irradiation during MRI in various sequences -To clarify the usefulness of a new real-time measurement device for temperature during MRI

TABLE OF CONTENTS/OUTLINE

Advantages/disadvantages of temperature evaluation methods A fiberoptic thermometer, a newly developed thermometer, and use of MRI parameters with T1, such as proton chemical shift and apparent diffusion coefficient, were investigated. A new real-time temperature measurement/management device for MRI The new system consists of sensors using a thermocouple with non-magnetic material (copper-constantan), cable with electromagnetic shielding, and display including management device. SUMMARY: The temperature rise during MRI should be measured in real-time to accurately assess the effects of SAR, especially in 3T-MRI. To date, temperature during MRI has been estimated by calculations using simulations. However, such methods lack accuracy. The new device for real-time measurement of patient temperature during MRI will be useful, because it has a high degree of accuracy, multichannel sensors, and other advantageous characteristics.

Overview of Quantitative Tumor Imaging with an Emphasis on International Outreach: Evidence-based Approach to Filling the Global Knowledge-void

All Day Location: HP Community, Learning Center

Participants

Anand K. Singh, MD, Boston, MA (*Presenter*) Nothing to Disclose

Wenli Cai, PhD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose

Gordon J. Harris, PhD, Boston, MA (*Abstract Co-Author*) Medical Advisory Board, Fovia, Inc

Garry Choy, MD, MS, Boston, MA (*Abstract Co-Author*) Nothing to Disclose

James H. Thrall, MD, Boston, MA (*Abstract Co-Author*) Board Member, Mobile Aspects, Inc; Board Member, WorldCare International Inc; Consultant, WorldCare International Inc; Shareholder, Antares Pharma, Inc; Shareholder, iBio, Inc ; Shareholder, Peregrine Pharmaceuticals, Inc

TEACHING POINTS

With the advances in scanner technology and availability of near-isotropic voxel resolution scan data, differential quantification of tumor subcomponents and biomarkers of various malignant processes may be possible. However, several limitations with educational and economic factors limit availability of such options to developing and low income nations. The exhibit reviews trends in CAD volumetry as an imaging biomarker with evidence based support with an emphasis on global outreach. The exhibit provides education on imaging pre-requisites for volumetry and computer-aided detection (CAD) and CAD availability, development and research considerations in developing nations and region-wise economical, educational and research stratification for such imaging upgrades with possible solutions.

TABLE OF CONTENTS/OUTLINE

Principles and prerequisites of volumetry. Discuss considerations and factors in developing and low-income nations that define availability and development of quantitative imaging. Differential quantification of tumor sub-components with evidence-based approach. E.g. Soft tissue tumors, liver tumors. Pathological estimates and volumetry with study data points to explain imaging and pathological correlation. Emerging concepts in CAD and global considerations.

Disease-specific Abdominal CT Report Templates for Improved Patient Care

All Day Location: HP Community, Learning Center

Participants

Ning Lu, MD, Boston, MA (*Presenter*) Nothing to Disclose
Thomas J. Anderson, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Koenraad J. Morteles, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Bettina Siewert, MD, Brookline, MA (*Abstract Co-Author*) Nothing to Disclose
Vassilios D. Raptopoulos, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Olga R. Brook, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

Structured disease-specific templates have been shown to be highly effective for referring clinicians seeking precise information to guide further clinical management and surgical planning. Disease-specific templates should be prepared by radiologist in close collaboration with referring physicians specializing in the focus of the template. Examples of disease-specific templates are provided.

TABLE OF CONTENTS/OUTLINE

Benefits of structured reporting for radiology: clinical practice, research and billing
Benefits of structured reporting to referring physicians: clear and concise report that provides needed information that is easy to interpret
Pitfalls of structured reporting: potential to miss subtle details which are not detailed in the template
How to develop disease-specific CT template in your clinical practice: Focus on frequent studies with high clinical impact
Ask referring physician what are they looking for in the report
Continue to edit the template after implementation
Examples of disease-specific reporting templates: OPTN criteria for HCC
Acute / Chronic pancreatitis
Post-operative evaluation of liver transplant
Renal mass evaluation
Living liver donor evaluation

Medical Malpractice Survival Guide for Radiologists

All Day Location: HP Community, Learning Center

Awards

Certificate of Merit

Participants

Aparna Srinivasa Babu, MD, Darby, PA (*Presenter*) Nothing to Disclose

Amanda L. Steinberger, DO, Darby, PA (*Abstract Co-Author*) Nothing to Disclose

Michael L. Brooks, MD, JD, Lansdowne, PA (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

The role and duties of a physician in the successful defense of a malpractice lawsuit
Malpractice case do's and don'ts
Steps to ensure minimizing the risk of a malpractice lawsuit
Tips on dealing with the consequences of a lawsuit

TABLE OF CONTENTS/OUTLINE

Overview of the American legal system
Medical malpractice law in the United States
Malpractice insurance essentials
Anatomy of a malpractice case
Filing of the suit-complaint
Service of the complaint letter
What to do when served
Discovery; pretrial deposition
Pretrial modes of disposition
Trial Verdict
Post-verdict motions
Role of apology and alternative dispute resolution (mediation/arbitration) in medical malpractice
Steps to minimize the impact of a lost lawsuit
Asset protection
Medical malpractice stress syndrome
A look into the future of medical malpractice law and reform proposals

SPSP01

Diagnóstico Precoz por Imagen en la Población el CIR: Sesión del Colegio Interamericano de Radiología (CIR) en Español/Population based Preventive Imaging from CIR: Session of the Interamerican College of Radiology (CIR) in Spanish

Saturday, Nov. 28 1:00PM - 5:00PM Location: E451A



AMA PRA Category 1 Credits™: 3.75
ARRT Category A+ Credits: 4.00

Participants

Pablo R. Ros, MD, PhD, Cleveland, OH (*Moderator*) Medical Advisory Board, Koninklijke Philips NV; Medical Advisory Board, KLAS Enterprises LLC; Medical Advisory Committee, Oakstone Publishing; Departmental Research Grant, Siemens AG; Departmental Research Grant, Koninklijke Philips NV; Departmental Research Grant, Sectra AB; Departmental Research Grant, Toshiba Corporation
Miguel E. Stoopan, MD, Mexico City, Mexico (*Moderator*) Nothing to Disclose

LEARNING OBJECTIVES

1) To review the state-of-the-art of population based preventive imaging 2) To discuss preventive imaging approaches in all major organ systems and key pathologies, ranging from dementia, cardiovascular disease, colon, liver, lung and breast cancer 3) To illustrate the use of different imaging technologies in preventive imaging such as CT, MRI and ultrasound

Sub-Events

SPSP01A Introducción/Introduction

Participants

Dante R. Casale Menier, MD, Ciudad Juarez, Mexico (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

SPSP01B Parte 1/Part 1

Participants

LEARNING OBJECTIVES

View learning objectives under main course title.

SPSP01C Presentación de Ponentes/Panel Introduction

Participants

Pablo R. Ros, MD, PhD, Cleveland, OH (*Presenter*) Medical Advisory Board, Koninklijke Philips NV; Medical Advisory Board, KLAS Enterprises LLC; Medical Advisory Committee, Oakstone Publishing; Departmental Research Grant, Siemens AG; Departmental Research Grant, Koninklijke Philips NV; Departmental Research Grant, Sectra AB; Departmental Research Grant, Toshiba Corporation

LEARNING OBJECTIVES

View learning objectives under main course title.

SPSP01D Colon: La Colonografía Virtual: ¿Un Método de Escrutinio en la Poblacion?/Colon: Virtual Colonography: A Population Screening Tool?

Participants

Jorge A. Soto, MD, Boston, MA (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Jorge A. Soto, MD - 2013 Honored Educator
Jorge A. Soto, MD - 2014 Honored Educator
Jorge A. Soto, MD - 2015 Honored Educator

SPSP01E Cardiovascular: Cribaje de Enfermedad Cardiovascular por Imagen Medica/Cardiovascular: Diagnostic Imaging in Cardiovascular Screening

Participants

Carlos S. Restrepo, MD, San Antonio, TX (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Carlos S. Restrepo, MD - 2012 Honored Educator

Carlos S. Restrepo, MD - 2014 Honored Educator

SPSP01F Neurología: Diagnóstico Temprano de Demencias: ¿Dónde Estamos?/Neurology: Dementia Early Diagnosis: Where Are We?

Participants

Carlos Zamora, MD,PhD, Chapel Hill, NC (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

Objetivos: 1) Comprender conceptos clínicos básicos para el diagnóstico de los síndromes principales de demencia. 2) Reconocer características anatómicas y metabólicas fundamentales de neuroimagen en los síndromes principales de demencia, con especial atención a enfermedad de Alzheimer. 3) Explorar direcciones futuras y desafíos para el diagnóstico temprano. Learning objectives: 1) Understand basic clinical concepts for the diagnosis of major dementia syndromes. 2) Recognize fundamental anatomic and metabolic neuroimaging features of major dementia syndromes, with special focus on Alzheimer's disease. 3) Explore future directions and challenges for early diagnosis.

SPSP01G Parte II/Part II

Participants

LEARNING OBJECTIVES

View learning objectives under main course title.

SPSP01H Presentación de Ponetes/Panel Introduction

Participants

Miguel E. Stoopan, MD, Mexico City, Mexico (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

SPSP01I Mama: Rol de la RM en el Cáncer de Mama en Mujeres de Alto Riesgo/Breast: Role of MR in High Risk Breast Cancer Patients

Participants

Linei A. Urban, Curitiba, Brazil (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

SPSP01J Pulmón: TC de Cribaje en Cancer de Pulmon: ¿Debe Hacerse en Fumadores y Exfumadores?/Lung: Lung Cancer CT Screening: Should It Be Performed in Smokers and Former Smokers?

Participants

Claudio S. Silva Fuente-Alba, MD, MSc, Santiago, Chile, (csilvafa@alemana.cl) (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

SPSP01K Hígado: Cribaje del Hepatocarcinoma en Pacientes de Riesgo: ¿Cómo Hacerlo y a Quién Incluir?/Liver: Hepatocellular Carcinoma Screening in High Risk Patients: How and Whom?

Participants

Carmen Ayuso, MD,PhD, Barcelona, Spain, (cayuso@clinic.ub.es) (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Definir la población en riesgo de desarrollar un carcinoma hepatocelular que debe ser incluida en un programa de cribado. 2) Analizar la mejor estrategia para llevar a cabo el cribado del hepatocarcinoma en la población en riesgo de padecerlo. 3) Discutir la conducta a seguir una vez que se detecta un nódulo hepático en pacientes incluidos en un programa de cribado. 1) To define the population at risk of hepatocellular carcinoma to be included in a surveillance program. 2) To analyze the best strategy for

surveillance in patients at risk of hepatocellular carcinoma. 3) To discuss how to proceed when a liver ndule is detected in patients on surveillance

SPSP01L Comentarios Finales y Clausura/Closing Remarks

Participants

Dante R. Casale Menier, MD, Ciudad Juarez, Mexico (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

Health Service, Policy and Research Sunday Poster Discussions

Sunday, Nov. 29 12:30PM - 1:00PM Location: HP Community, Learning Center

HP

AMA PRA Category 1 Credit™: .50

Participants

Kimberly E. Applegate, MD, MS, Zionsville, IN (*Moderator*) Nothing to Disclose

David C. Levin, MD, Philadelphia, PA (*Moderator*) Consultant, HealthHelp, LLC; Board of Directors, Outpatient Imaging Affiliates, LLC

Sub-Events

HP200-SD- SUA1 Radiology Education for the 21st Century: Effectiveness of E-learning

Station #1

Participants

Michele Retrouvey, MD, Norfolk, VA (*Presenter*) Nothing to Disclose

Anthony P. Trace, MD, DPhil, Richmond, VA (*Abstract Co-Author*) Nothing to Disclose

Tina Cunningham, PhD, Norfolk, VA (*Abstract Co-Author*) Nothing to Disclose

Craig W. Goodmurphy, PhD, MSc, Norfolk, VA (*Abstract Co-Author*) Nothing to Disclose

Sarah C. Shaves, MD, Virginia Beach, VA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Providing new ways of integrating vast quantities of information in an "on demand" and self-directed (or self-guided) basis is becoming a central tenet of modern medical education. Despite its integral role in modern medicine, Radiology is often not systematically taught or routinely integrated into undergraduate medical training. To address these issues, we created a globally accessible, online-based undergraduate medical radiology curriculum with the help of an RSNA Education Scholar Grant. To assess the efficacy of our training modules we analyzed student performance before and after receiving training on the interpretation of basic chest radiography.

METHOD AND MATERIALS

A quiz on the basics of chest radiography was administered to 115 first year medical students at the beginning of the academic year. A basic chest radiography module consisting of a storyboard and video was developed and presented to first year medical students. The quiz was repeated after viewing the video. Pre- and post-test scores were analyzed using a paired student's t-test.

RESULTS

The first year medical students scored, on average 39% on the quiz prior to review the training module. After completing the online, self-paced education session the average score was 68%, a statistically significant improvement in the participants' knowledge regarding the basic concepts and understanding/interpretation of chest radiography.

CONCLUSION

Self-paced, interactive, online module-based training is a highly accessible and an effective tool to introduce radiologic concepts into undergraduate medical education and improve basic radiographic knowledge.

CLINICAL RELEVANCE/APPLICATION

Radiology interconnects medical disciplines and a functional understanding has become essential to clinical practice. Cohesive curricular integration of imaging is lacking at many medical schools. The creation of a modern, web-based radiology curriculum enables students to learn the fundamentals of radiographics, and the implementation of these modules have proven an effective teaching tool.

HP201-SD- SUA2 Radiology Exposure in Undergraduate Medical Education-A Survey of Program Directors of Undergraduate Medical Education Across Canada

Station #2

Participants

Kari L. Visscher, MD, London, ON (*Presenter*) Nothing to Disclose

Andrew Zaleski, BMedSc, London, ON (*Abstract Co-Author*) Nothing to Disclose

Pooitsing A. Lum, MD, London, ON (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Currently, there is not much research on undergraduate medical education (UME) teaching of radiology in Canadian medical schools. The present study focuses on identifying important characteristics of radiology exposure in UME including the educational formats being adopted. Qualitative methods are used to explore how program directors (PD) of UME perceive the current and future status of radiology education.

METHOD AND MATERIALS

An electronic questionnaire was sent to Canadian medical schools that have a designated UME PD (15 of the 17 accredited schools). Mainly descriptive statistics and thematic analysis were applied to the quantitative and qualitative data, respectively.

RESULTS

73% response rate. The top 3 teaching methods for radiology include lectures (100%), electives (91%), and observerships (82%). Program directors feel they are offering somewhat to good quality radiology exposure (3.7 +/- 0.3 out of 5). When asked what

students need to learn to be good residents, most (71% of responses) describe image interpretation proficiency.

CONCLUSION

From the data, 3 major conclusions are discussed. (1) Most schools use traditional formats of lectures, electives, and observerships to teach medical students radiology. Less commonly used, but potentially effective formats include on-line resources, radiology interest groups, and research. (2) Focus of UME PD's appears to be on teaching image interpretation with less emphasis on appropriateness criteria. (3) Canadian UME curriculum transformation to a competency by design format may allow for radiology residents to have a larger role in UME education and mentorship.

CLINICAL RELEVANCE/APPLICATION

Understanding the current state of radiology education in UME is a necessary step in developing a standardized approach to teaching radiology in Canada.

HP202-SD- Recent Trends in Advanced Imaging in Offices and Hospital Outpatient Facilities: Unexpected SUA3 Consequences of Multiple Reimbursement Cuts

Station #3

Participants

Bhavik Patel, MD, Philadelphia, PA (*Presenter*) Nothing to Disclose

David C. Levin, MD, Philadelphia, PA (*Abstract Co-Author*) Consultant, HealthHelp, LLC; Board of Directors, Outpatient Imaging Affiliates, LLC

Laurence Parker, PhD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose

Vijay M. Rao, MD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To study recent outpatient imaging trends in private offices and hospital outpatient departments (HOPDs) to determine if any shifting has occurred between the two. Concern has been expressed that reduced reimbursements and other factors might lead to closure of offices and a shift to higher cost HOPDs.

METHOD AND MATERIALS

The nationwide Medicare Physician/Supplier Procedure Summary Master Files for 2001-2013 were studied. All CPT codes for MRI, echocardiography, nuclear medicine, ultrasound, and CT were selected and procedure utilization rates per 1,000 Medicare beneficiaries were determined for each year. Medicare location codes identified the settings where the scans were performed.

RESULTS

Total utilization rates per 1,000 of all these exams in private offices grew rapidly from 478 in 2001 to 874 in the peak year of 2008 (+83%). The rate then declined sharply to 503 in 2011 (-42%), primarily as a result of code bundling in echocardiography in 2009, nuclear cardiac exams in 2010, and CT abdomen/pelvis in 2011. No further bundling occurred in 2012 and 2013, but there was continued decline from 503 to 462 in those years. In HOPDs, the total rate rose from 416 in 2001 to 523 in 2008 (+26%), followed by a bundling-related declines to 418 (-20%) in 2011. But in 2012 and 2013, in contrast to what happened in offices, the HOPD rate increased from 418 to 447. The ratio of private office to HOPD advanced imaging was 1.67 in 2008, declining to 1.03 in 2013. Similar individual modality shifts away from offices and into HOPDs were quite apparent in MRI, echocardiography, and nuclear medicine, and have recently become apparent in ultrasound and CT. The office-to-HOPD ratio in 2008 and 2013 were as follows in the different modalities: MRI 1.12 and 0.88; echocardiography 3.62 and 1.42; nuclear medicine 2.59 and .90; ultrasound 1.82 and 1.68; and CT 0.54 and 0.44.

CONCLUSION

In recent years, there has been a shift in utilization from private offices into HOPDs in all advanced imaging modalities. This could portend a loss of access for patients to advanced imaging and an increase in costs due to the higher reimbursements paid to HOPDs.

CLINICAL RELEVANCE/APPLICATION

A shift in utilization of advanced imaging from private offices to hospital outpatient departments could lead to increased costs and loss of access to advanced imaging for patients.

HP119-ED- Practice Quality Improvement (PQI): A Systematic Approach SUA4

Station #4

Participants

Mohammad Mansouri, MD, MPH, Boston, MA (*Abstract Co-Author*) Nothing to Disclose

Khalid W. Shaqdan, MD, Boston, MA (*Presenter*) Nothing to Disclose

Hani H. Abujudeh, MD, MBA, Boston, MA (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

To review the Plan-Do-Study-Act cycle with examples To discuss the benefits and limitations of Individual, Group or Institutional PQI Projects To explain the Hawthorne and Weber effects and how they might affect the PQI results

TABLE OF CONTENTS/OUTLINE

Introduction Individual Projects PDSA cycle Group Projects Standards for Group Process Standards for Group Project Group meetings Institution/Health Care Organization Projects Weber Effect Hawthorne effect

Health Service, Policy and Research Sunday Poster Discussions

Sunday, Nov. 29 1:00PM - 1:30PM Location: HP Community, Learning Center

HP

AMA PRA Category 1 Credit™: .50

Participants

Kimberly E. Applegate, MD, MS, Zionsville, IN (*Moderator*) Nothing to Disclose

David C. Levin, MD, Philadelphia, PA (*Moderator*) Consultant, HealthHelp, LLC; Board of Directors, Outpatient Imaging Affiliates, LLC

Sub-Events

HP203-SD- SUB1 **Frequency of inclusion of Plan-Do-Study-Act cycles in Published Quality Improvement Reports - A Systematic Review**

Station #1

Participants

Yvonne Y. Cheung, MD, MS, Lebanon, NH (*Abstract Co-Author*) Nothing to Disclose

Krishna Patel, MD, Lebanon, NH (*Presenter*) Nothing to Disclose

Tomiwa O. Anuoluwatomiwa, MENG, Lebanon, NH (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

The distinctive feature of QI projects as opposed to scientific discoveries is the Plan-Do-Study-Act (PDSA) cycle, but it not known what proportion of the published QI projects incorporated PDSA cycles. The purpose of this study is to perform a systematic review on the frequency of inclusion of PDSA in published QI reports

METHOD AND MATERIALS

A search of MEDLINE and Cockrane Library data bases was performed to identify published QI initiatives. We include all radiology-related journals, the list compiled by the Journal Citation Reports, published between Jan 1, 2008 to February 1, 2015. The rationale for the 2008 cutoff was based on the year when the Standards for QQuality Improvement Reporting Excellence (SQUIRE) were published. Radiation oncology and Imaging physics journals were excluded. Additional inclusion and exclusion criteria were applied. The frequency of inclusion of PDSA cycles, a distinctive feature of Quality Improvement initiatives, was evaluated. Additional study characteristics and performance items such as use of QI analytic tools and graphical display were assessed.

RESULTS

Among the 29 articles that satisfied the inclusion criteria, PDSA cycles were recorded in 18 (62%) publications. QI tools were employed also in 18 (62%) reports. Graphical display of performance over time was found in 21 (69%). The average time for completion of the QI project was 1.79 years (range 6 months to 3 years). In 9 reports, there was no mention or description of team members. Only 8 reports stated their target performance prior to intervention. Discussion on limitations of the study was absent in 9 reports. Despite these variations, intervention results in positive improvement in all reports.

CONCLUSION

Although PDSA cycles are techniques unique to QI, they are employed in only 62% of published QI initiatives.

CLINICAL RELEVANCE/APPLICATION

When using published QI initiatives as templates to improve our practice, the radiologist has to be aware that these reports do not consistently include unique QI techniques, such as PDSA cycles and QI analytic tools.

HP204-SD- SUB2 **Imaging Surveillance in Patients after a Benign Fine-Needle Aspiration Biopsy of the Thyroid: Associated Cost and Incidence of Subsequent Cancer**

Station #2

Participants

David J. Becker-Weidman, MD, Philadelphia, PA (*Presenter*) Nothing to Disclose

David Reilly, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose

Naveen Selvam, MD, Royal Oak, MI (*Abstract Co-Author*) Nothing to Disclose

Laurence Parker, PhD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose

Levon N. Nazarian, MD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To determine patterns and cost of imaging tumor surveillance in patients after a benign fine-needle aspiration biopsy (FNA) of the thyroid performed in our large teaching hospital, and the rate of subsequent cancer detection.

METHOD AND MATERIALS

This study was IRB approved and HIPAA compliant. Using our institutional pathology database we identified all patients who had a thyroid FNA between 1/1/1999 and 12/31/2003. Biopsies with insufficient material, indeterminate results, or evidence of malignancy were excluded. Using our electronic medical record we gathered information on imaging tumor surveillance and subsequent cancer detection. Cost was determined using the total non-facility fee in the Hospital Outpatient Prospective Payment System published by the Center for Medicare and Medicaid Services and the 2014 Ambulatory Patient Classification conversion factor.

RESULTS

Between 1/1/1999 and 12/31/2003, 2,305 patients had a thyroid FNA. 161 (7.0%) had an insufficient specimen, 321 (14.0%) had

indeterminate results, and 139 (6.0%) had malignant results. The 1,684 (73.1%) with a benign biopsy included 1504 women (89.3%) and 180 men (10.7%) with a mean age of 51 years old (range: 14 to 88 years). 835 (49.6%) of these patients did not receive follow-up imaging at our institution. The remaining 849 (50.4%) received 2,427 thyroid ultrasound (US) studies, 624 US-guided thyroid FNA, 75 neck CTs, and 43 neck MRIs. The mean length of follow-up was 2499 days (range 1-5515 days). The cost of the US studies was \$578,510, of the biopsies was \$224,016, of the CTs was \$35,973, and of the MRIs was \$35,280, for a total cost of \$873,778 or \$1,029 per patient. 38 (4.4%) cancers were detected in this population at a cost of \$22,994 per cancer. These included 35 papillary carcinomas (92.1%) and 3 Hurthle cell carcinomas (7.9%). 10 of the papillary carcinomas were incidental. Only 2 (5.2%) cancers had metastases to cervical lymph nodes, and none had distant metastases.

CONCLUSION

Over a five year period, about half of the patients who had a benign thyroid FNA at our institution received follow-up imaging at considerable cost and with a small rate of subsequent malignancy.

CLINICAL RELEVANCE/APPLICATION

Although a small percentage of patients will develop cancer after a benign thyroid FNA, imaging tumor surveillance may not be cost-effective especially considering the generally favorable outcomes of thyroid cancer.

HP205-SD- Emergency Department Diagnostic Imaging Use: Modeling Physician Ordering Variability SUB3

Station #3

Participants

Christopher Smith, MD, St. Johns, NL (*Presenter*) Nothing to Disclose

Rick S. Bhatia, MD, Mount Pearl, NL (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

This study explores variation in emergency department physician use of diagnostic imaging. A number of factors are proposed to account for purported variability, and ordering physician experience and emergency department patient volumes are commonly cited.

METHOD AND MATERIALS

Imaging data was retrieved from a single PACS imaging database covering emergency departments servicing a metropolitan area during the year 2012 and 2013. Variables of interest relating to the emergency departments were generated, and included practitioner-characteristics (e.g., age, sex, experience), as well as shift characteristics (e.g., number of physicians working, number of patients presenting to triage, admission frequency, weather). Statistical modelling was used to analyse practice variation by exploring factors at the imaging study, physician and departmental levels. Multiple regression and time-series analysis was performed.

RESULTS

A total of 7352 diagnostic imaging studies were performed during the study period. Frequency tables were generated for individual study types, with non-contrast CT head being the most common study (21%). Analysis of temporality showed significant intraday and interday variation in study frequency, with significantly more studies performed during late afternoon hours, and on Monday and Friday. Seasonality was also present, with significantly more studies performed during the summer and late fall months. In terms of physician-related variability, there was significant variability in ordering frequency across ER physicians (mean 0.13 studies/hour), though less variability in the imaging-work hour rate. A regression model of these variables showed good fit ($R^2=0.62$). A time-series model of daily imaging frequency and ER presenting patient volumes did not show a significant association ($p=.81$).

CONCLUSION

There is significant intra and interday variability in emergency department diagnostic imaging requests. While there are outliers, emergency physician ordering frequency correlates moderately with hours worked. Variation in the number of patients presenting to the emergency departments does not significantly correlate with imaging frequency in this population.

CLINICAL RELEVANCE/APPLICATION

This study aims to generate quality evidence on the topic of emergency department imaging utilization to inform better allocation and use of imaging personnel and resources.

HP103-ED- MR Safety 101: What All Radiologists Must Know SUB4

Station #4

Awards

Cum Laude

Participants

Jennifer J. Wan, MD, San Francisco, CA (*Presenter*) Nothing to Disclose

Soonmee Cha, MD, San Francisco, CA (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

This educational exhibit should benefit radiologists of all training levels in reviewing key MR safety topics addressed by the American College of Radiology and American Board of Radiology. Additionally, trainees will become familiar with important MRI safety topics addressed by the ABR CORE Examination Study Guide as well as the ABR Core Quality and Safety Study Guide. At the end of the exhibit, the learner should understand the relevant points within the following topics related to MRI safety Personnel qualification and training, site access Time varying magnetic field related issues Pregnancy related concerns Contrast agent safety Emergency response Devices and MRI safety

TABLE OF CONTENTS/OUTLINE

The case will be presented in a quiz format. Key MRI safety points based on the ABR and ACR Guidance documents will be reviewed. Potential hazards and risks Magnetic field risk RF and gradient field risk - thermal Quench event - Cryogen risk MR Site Access,

Personnel Training Magnetic field distribution Review 4 MR zones Level 1 and Level 2 personnel Screening (patients, MRI personnel, other staff) Emergency Response MR contrast Pregnancy related concerns Devices and Contraindications

RC127

Accountable Care Organizations: Real World Experience for Radiologists

Sunday, Nov. 29 2:00PM - 3:30PM Location: S105AB

HP

AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Clifford J. Belden, MD, Lebanon, NH, (cliffbelden@gmail.com) (*Coordinator*) Nothing to Disclose
Clifford J. Belden, MD, Lebanon, NH, (cliffbelden@gmail.com) (*Moderator*) Nothing to Disclose
John H. Lohnes, MD, Wichita, KS (*Presenter*) Nothing to Disclose
Jonathan Breslau, MD, Sacramento, CA (*Presenter*) Investor, BioIncept, LLC

LEARNING OBJECTIVES

1) Contrast the potential risks and benefits of new payment models vs. traditional fee for service from the patient and radiologist perspective. 2) Explain the impact that new payment models might have on the practice of radiology. 3) Identify the opportunities that new are emerging as payment transitions away from traditional fee for service. 4) Explain how imaging impacts cost risk within health care organizations to support value-based payments. 5) Describe the effect of an increasingly price-conscious consumer on radiology business models.

ABSTRACT

RC129

Should I Scan That Patient? A Very Interactive Session on MR Safety and Regulations (An Interactive Session)

Sunday, Nov. 29 2:00PM - 3:30PM Location: E353C



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Jeffrey C. Weinreb, MD, New Haven, CT (*Presenter*) Nothing to Disclose

Emanuel Kanal, MD, Pittsburgh, PA (*Presenter*) Consultant, Boston Scientific Corporation; Consultant, Medtronic, Inc; Consultant, St. Jude Medical, Inc; Consultant, Bayer AG; Investigator, Bracco Group; Royalties, Guerbet SA;

LEARNING OBJECTIVES

1) Analyze the cause and avoidance of a spectrum of common MR safety issues, including burns. 2) List the factors (including regulation and guidelines) which should be evaluated in order to determine the safety of MRI in patients with implants, devices, or foreign objects. 3) Answer questions from the audience concerning MRI safety issues

ABSTRACT

The major potential safety considerations in magnetic resonance imaging relate to those stemming from the static magnetic field, the time varying radiofrequency oscillating magnetic fields, the time varying switched gradient magnetic fields, the contrast agents often utilized in the MR imaging process, sedation/anesthesia and monitoring-related issues unique to the MR imaging environment, and cryogen related potential safety concerns. These can present confounding situations for MR practitioners faced with questions relating to the safety of exposing particular patients and devices, implants, or foreign bodies to MR imaging examinations. This session will introduce and briefly explain the above safety considerations, and highlight specific issues likely to confront MR practitioners in their daily practice by utilizing real-life examples. The methodology and reasoning process used to approach these clinical examples in determining risk-benefit ratios for accepting or rejecting such patients from MR exposure will be stressed. The emphasis will be on not so much the particular examples used, but rather having the attendee feeling more comfortable with the approach to such clinical and research situations in order to better enable them to appropriately address such questions in their own daily practice routines. Audience polling and interaction will be actively utilized throughout this session. This will help enable the attendee to not only hear the opinions of the presenters on the cases being discussed, but also to assess their own responses to the questions being posed relative to that of the other attendees of this session.

Lasting Cultural Shift - Platitudes to Attitudes: Roundtable with ACR Leaders

Monday, Nov. 30 8:30AM - 10:00AM Location: E260



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Bibb Allen JR, MD, Birmingham, AL (*Coordinator*) Nothing to Disclose

Bibb Allen JR, MD, Birmingham, AL (*Moderator*) Nothing to Disclose

ABSTRACT

Because of changing federal policy and reimbursement models, the next five years may be the most tumultuous for medicine and our specialty since the adoption of Medicare. Leaders in organized radiology are working to place our specialty in the best possible position, but we face complex issues requiring complex and potentially counterintuitive solutions. Strategic decisions made by our organizations need to be informed by and have buy-in from those in the trenches of clinical practice. The imperatives of health reform and the dynamic shift from volume based transactional care to value based population care are creating the critical issues facing our specialty. In this roundtable session, we discuss a number of the critical issues facing our practices and discuss proactive strategic initiatives that can empower radiologists to transition from volume based to value based care and position their practices to succeed in the new paradigm. While integral to providing optimal radiological care, the value of the interpretations we provide will ultimately be taken for granted by our systems and policy makers. In order to provide additional value we must look beyond just the value of our interpretations. By engaging in the care prior to and following image interpretation, radiologists can improve individual patients' safety, outcomes and engagement as well as improve population health. This measurable role for radiology in providing cost effective care will increase our relevance to the healthcare system beyond image interpretation. Participants can share their ideas and concerns with leaders in organized radiology as well as take away a number of tools they can use in their practices to begin or enhance the shift to value based care. Using these strategies, radiologists can leverage the value they create to enhance their position in their health systems and your professional organizations can leverage that same value with policy makers to impact federal health policy.

Sub-Events

RC227A Awareness to Accountability: Coping with the Mandates for Documenting Higher-Value Care

Participants

Bibb Allen JR, MD, Birmingham, AL (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Recognize the economic, political and practice issues facing our specialty. 2) Analyze the federal policy, private payer, health system and consumer initiatives that are signaling the shift toward value-driven care and reimbursement models. 3) Review organized radiology's efforts to raise awareness and promote culture change among radiologists to adapt to the mandates of health reform. 4) Discuss organized radiology's role in empowering radiologists to document the delivery of higher value care through metrics development, policy maker engagement, and data collection/registry development for reporting quality data to policy makers and certification bodies. 5) Examine how registry reporting can enable socioeconomic researchers to assess ways imaging can improve outcomes.

ABSTRACT

Health and Human Services Secretary Sylvia Burwell along with the US Congress have set ambitious targets for value-based payments in the US Medicare program with the goal of tying 85% of Medicare fee-for-service payments to quality or value metrics by 2016. Raising awareness will not be enough to achieve a lasting cultural shift required to cope with these mandates. Empowering radiologists to transition from volume based to value based care and position their practices requires development of meaningful metrics specific to radiology for quality reporting is essential and developing tools to capture this meaningful information as part of our daily workflow is requisite for efficient practice. By standardizing these metrics we have an opportunity for national registry reporting, which offers not only opportunity for internal process improvement but also benchmarking for government agencies to be used for quality reporting in the Physician Quality Reporting System (PQRS) and potentially by American Board Radiology for meeting Practice Quality Improvement (PQI) requirements for Maintenance of Certification (MOC). The goal is for radiologists to seamlessly participate in PQRS and potentially PQI and MOC by automatically reporting their metrics to the registries and monitoring their dashboards for areas that need improvement. Additionally, registry reporting allows data mining that will support future socioeconomic research in radiology, so that we can learn where there are opportunities for further improvement in the care of our patients and cost efficiencies.

RC227B Providing Higher-Value Care through Population Health Management: What Is the Radiologist's Role?

Participants

James A. Brink, MD, Boston, MA (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Examine current trends and mandates for physician involvement in population health management. 2) Explain the differences and synergies between population health management and the art of medical practice. 3) Discuss the value radiologists can bring to population health management and how this role will become an important resource for their health systems. 4) Identify the tools radiologists can use in their practices to be effective in population health management by reducing variation in radiological care. 5) Discuss the role of precision and personalized medicine in population health management.

ABSTRACT

Specialists may leverage several strategies when seeking to manage population health. For radiologists, reducing variation in the

Specialists may leverage several strategies when seeking to manage population health. For radiologists, reducing variation in the imaging examinations that we recommend and how we report key findings has the potential to support more uniform and appropriate care at the population level. Under-utilization of medical imaging risks decrements in the health of our population while over-utilization leads to increased cost and heightened morbidity from unnecessary follow-on imaging and interventional procedures. Moreover, increased precision in the quantitative nature of our reports promises to yield more effective treatments as therapies are personalized to precise patient phenotypes and disease states. Appropriateness criteria and referral guidelines take the guesswork out of which tests to recommend, and imaging-based care algorithms narrow the range of recommendations that referrers may receive in response to a clinical imaging scenario. However, such changes to our practice threaten the 'art of medicine' where intuition plays an important role in establishing diagnoses and understanding disease severity. Art can take many forms, and the transition from personal impression to consensus and fact-based conclusion in the tests we recommend and the reports that we generate mirror the transition from abstract art to photorealism. The increase in precision does not make 'art' any less artistic; rather, it is simply based on a different set of principles.

RC227C Involving Patients in Their Radiological Care: Radiologist Visibility, Personalized Care and Improving Outcomes

Participants

Geraldine B. McGinty, MD,MBA, New York, NY (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Discuss the ways radiologists can enhance patients' experiences throughout the continuum of radiological care. 2) Identify tools and resources for patient education regarding their radiological care. 3) Describe the current mandates for patient access to medical records and discuss ways for effective communication between radiologists and patients. 4) Leverage the value of patient-centered radiological care as a resource for health systems. 5) Identify ways to improve patient outcomes through effective communication.

ABSTRACT

Reform of the healthcare delivery system has as a stated goal the so-called "Triple Aim": to reduce costs while improving both population health as well as the individual experience of care. For radiologists, many of whom do not typically meet the patients whose images they interpret, this represents both a challenge as well as a significant opportunity. Across the continuum of imaging care delivery there are points at which radiologists can engage patients to improve not only the patient's level of satisfaction but also their eventual outcome. For example a patient who understands the nature of the imaging test they will undergo is more likely to be able to cooperate in the process of making sure the images are of the highest diagnostic quality. We will review the resources available to radiologists to support them in engaging their patients at each step of the imaging care process. We will focus on disruptive innovations around direct communication of results to patients and sharing of images and discuss how payment models and regulations are fuelling these changes. We will also highlight how providing a more patient-centered imaging care experience will align radiologists with a value based approach to healthcare delivery providing opportunities to demonstrate the value that imaging provides to stakeholders both internal such as health system administration and external such as payers.

RC254

Health IT Policy Panel: The New Federal Requirement for Imaging Decision Support (H.R. 4302)

Monday, Nov. 30 8:30AM - 10:00AM Location: S102C



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

David B. Larson, MD, MBA, Los Altos, CA (*Moderator*) Intellectual property license agreement, Bayer AG; Potential royalties, Bayer AG

Sub-Events

RC254A Overview of the Imaging Decision Support Requirement

Participants

Curtis P. Langlotz, MD, PhD, Menlo Park, CA, (langlotz@stanford.edu) (*Presenter*) Shareholder, Montage Healthcare Solutions, Inc; Advisory Board, Reed Elsevier; Advisory Board, Activate Networks, Inc;

LEARNING OBJECTIVES

1) Understand the requirements and scope of the new U.S. Federal decision support requirement in the Protecting Access to Medicare Act of 2014. 2) Learn the legal definition of appropriate use criteria. 3) Calculate the financial penalties for non-compliance. 4) Recognize the challenges CMS will face in implementing the law. 5) Recognize the challenges health care organizations will face in responding to the law.

Active Handout: Curtis P. Langlotz

<http://abstract.rsna.org/uploads/2015/15003159/RC254A.pdf>

RC254B The Origins of the Imaging Decision Support Legislation

Participants

Keith J. Dreyer, MD, PhD, Boston, MA (*Presenter*) Medical Advisory Board, IBM Corporation

RC254C Experience and Recommendations of the High Value Health Care Collaborative

Participants

Keith S. White, MD, Murray, UT, (keith.white@imail.org) (*Presenter*) Software support, Jidoka Systems

RC254D CMS Approach to Implementing the Legislation: Current Status

Participants

Joseph Hutter, Baltimore, MD (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Understand the key provisions of Section 218(b) of PAMA 2014. 2) Understand the CMS Final Rule setting up a new nationwide program for appropriate use criteria for imaging. 3) Understand the timetable for future components of the CMS program.

URL

https://www.federalregister.gov/articles/search?conditions%5Bregulation_id_number%5D=0938-AS40

SSC05

ISP: Health Service, Policy and Research (Evidence-based Medicine/Guidelines/Outcomes)

Monday, Nov. 30 10:30AM - 12:00PM Location: S102D



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credit: 0

FDA Discussions may include off-label uses.

Participants

Marta E. Heilbrun, MD, Salt Lake City, UT (*Moderator*) Nothing to Disclose
Paul P. Cronin, MD, MS, Ann Arbor, MI (*Moderator*) Nothing to Disclose

Sub-Events

SSC05-01 Health Service, Policy and Research Keynote Speaker: How to Establish a New Imaging Modality with Decent Evidence in Clinical Practice: What the Radiology Community Can Learn from Cardiac CT

Monday, Nov. 30 10:30AM - 10:40AM Location: S102D

Participants

Fabian Bamberg, MD, MPH, Munich, Germany (*Presenter*) Speakers Bureau, Bayer AG; Speakers Bureau, Siemens AG; Research Grant, Bayer AG; Research Grant, Siemens AG;

SSC05-02 Is There an Association between STARD Statement Adherence and Citation Rate?

Monday, Nov. 30 10:40AM - 10:50AM Location: S102D

Participants

Marc Dilauro, MD, MSc, Ottawa, ON (*Presenter*) Nothing to Disclose
Matthew D. McInnes, MD, FRCPC, Ottawa, ON (*Abstract Co-Author*) Nothing to Disclose
Daniel Korevaar, Netherlands, Netherlands (*Abstract Co-Author*) Nothing to Disclose
Christian B. Van Der Pol, MD, Ottawa, ON (*Abstract Co-Author*) Nothing to Disclose
Jeffrey Quon, MD, Ottawa, ON (*Abstract Co-Author*) Nothing to Disclose
Stefan Walther, Berlin, Germany (*Abstract Co-Author*) Nothing to Disclose
Darya Kurowecki, Ottawa, ON (*Abstract Co-Author*) Nothing to Disclose
William Petrlich, MSc, Ottawa, ON (*Abstract Co-Author*) Nothing to Disclose
Patrick M. Bossuyt, PhD, Amsterdam, Netherlands (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To determine if adherence to the STARD checklist is associated with post-publication citation rates.

METHOD AND MATERIALS

A comprehensive search of multiple databases including PubMed, EMBASE and Cochrane was performed in order to identify published studies that have evaluated adherence of diagnostic accuracy studies to the Standards for Reporting of Diagnostic Accuracy (STARD) statement. Each study was searched in PubMed and Reuters Web of Science to yield a date of publication, journal impact factor (IF), and a citation rate (citations/month). Univariate correlations were performed to identify any association between post publication citation rate and STARD score as well as impact factor. A multivariate analysis was performed to explore the effect of journal impact factor.

RESULTS

Our search included 1002 eligible articles from 8 studies. The median journal IF was 3.97 (IQR: 2.32-6.21), the median STARD score was 15 (IQR 12-18), and the median citation rate was 0.0073 citations/month (IQR 0.0032-0.017). A weak positive correlation of STARD score with citation rate was identified ($r=0.096$, $p=0.0024$). There is a moderate positive correlation between impact factor and citation rate ($r=0.58$, $p<0.0001$). A weak positive correlation of impact factor with STARD score was identified ($r=0.13$, $p<0.0001$). A multivariate analysis revealed that when the effect of impact factor is partialled out, the positive correlation of citation rate with STARD score does not persist ($r=0.026$, $p=0.42$).

CONCLUSION

There is a positive correlation between journal impact factor and citation rate as well as impact factor and STARD score. When adjusted for journal impact factor, the positive correlation of citation rate with STARD score does not persist.

CLINICAL RELEVANCE/APPLICATION

The variation in journal citation rate is influenced primarily by journal impact factor and to a lesser degree by STARD score.

SSC05-03 Carotid Imaging in Canada: A Cost-Effectiveness Analysis

Monday, Nov. 30 10:50AM - 11:00AM Location: S102D

Participants

Eli Lechtman, PhD, MSc, Toronto, ON (*Presenter*) Nothing to Disclose
Alan R. Moody, MD, Toronto, ON (*Abstract Co-Author*) Nothing to Disclose
Kevin Chen, Toronto, ON (*Abstract Co-Author*) Nothing to Disclose
Sylvia Urbanik, Toronto, ON (*Abstract Co-Author*) Nothing to Disclose
Pascal N. Tyrrell, PhD, Toronto, ON (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Diagnosing carotid artery disease relies on accessible and cost effective imaging to provide an accurate measure of stenosis. Currently, doppler ultrasound (DUS) is considered the first line modality of choice for suspected stenosis, while MR angiography (MRA) is often used to confirm the diagnosis and plan surgical interventions. In this simulation study, we explored the cost effectiveness of MRA alone vs DUS followed by MRA, for diagnosing suspected stenosis.

METHOD AND MATERIALS

Cost effectiveness analysis (CEA) was conducted using TreeAge Pro. Decision trees were modeled for three populations: those with stenosis less than 50%, those with stenosis between 50-69%, and those with stenosis above 70%. Based on the imaging findings, the decision trees included surgical intervention, medical management, or standard care arms. Effectiveness was measured in terms of quality adjusted life years accounting for surgery and complications, stroke, and medical management. Values for the relevant input variables were extracted from the literature, except the cost of imaging, which was reported from our institution.

RESULTS

Based on the CEA, MRA as a first line modality was more cost effective in populations with a high pretest probability of severe stenosis >70%. In a clinical setting, this would reflect patients with multiple risk factors for carotid disease, or patients presenting with symptoms of carotid stenosis such as a transient ischemic attack (TIA). While DUS as a first line modality was more cost effective for imaging the majority of patients suspected of having carotid stenosis <70%, CEA sensitivity analysis indicated that reducing MRA costs by shortening MRA protocol time and increasing effectiveness of information reported, MRA as a first line modality could be cost effective for an even larger portion of the at-risk population.

CONCLUSION

MRA alone may be more cost effective for patients with a high pretest probability of severe stenosis. Future simulations will explore the effect of wait times on cost effectiveness, as well as the cost effectiveness of emerging MR imaging techniques to identify plaque characteristics for stroke risk stratification and treatment decision making.

CLINICAL RELEVANCE/APPLICATION

Magnetic resonance angiography is shown to be a cost effective first line imaging modality to assess carotid disease, provided there is a high pretest probability of finding severe carotid stenosis.

SSC05-04 Computed Tomography and Magnetic Resonance Imaging of Peritoneal Metastases: Systematic Review and Meta-analysis

Monday, Nov. 30 11:00AM - 11:10AM Location: S102D

Awards

Trainee Research Prize - Resident

Participants

Davide Bellini, MD, Latina, Italy (*Presenter*) Nothing to Disclose

Damiano Caruso, MD, Rome, Italy (*Abstract Co-Author*) Nothing to Disclose

Marco Rengo, MD, Rome, Italy (*Abstract Co-Author*) Nothing to Disclose

Domenico De Santis, MD, Rome, Italy (*Abstract Co-Author*) Nothing to Disclose

Andrea Laghi, MD, Rome, Italy (*Abstract Co-Author*) Speaker, Bracco Group Speaker, Bayer AG Speaker, General Electric Company Speaker, Koninklijke Philips NV

PURPOSE

Primary end point was to assess diagnostic accuracy of CT and MR in detecting Peritoneal Metastases (PM). Secondary end-points were determining sensitivity and specificity of CT scans in detecting PM for the thirteen regions according to Sugarbaker's Peritoneal Cancer Index (PCI), investigating correlation between radiological PCI and surgical PCI, and comparing diagnostic yield of CT versus PET/CT.

METHOD AND MATERIALS

In June 2014, the MEDLINE, EMBASE, Cochrane Library, Sumsearch2 and Web of Science databases were searched. Methods for analysis were based on PRISMA. Characteristics of patients and studies included were collected. QUADAS2 tool was used to assess the methodological quality of the primary studies. Pooled estimates of sensitivity, specificity, positive and negative likelihood ratios were calculated using fixed and random effects models. I² was used to evaluate heterogeneity.

RESULTS

Twenty-two articles out of the 529 initially identified were selected (934 patients). Cumulative data of CT diagnostic accuracy on per patient basis were: Se 83% (95%CI: 79-86%; I²: 83.3%), Sp 86% (95%CI: 82-89%; I²: 65.5%), pooled positive LR 4.37 (2.58 to 7.41; I²: 81.2%), pooled negative LR 0.20 (0.11 to 0.35; I²: 85.4%). On per region basis according to PCI, sensitivity of CT was higher in two regions: epigastrium, 78% (95%CI 64-92%) and pelvis, Se 74% (95%CI 64-83%). Correlation between CT-PCI score and Surgical-PCI score were high, ranging from 0.49 to 0.96. MRI and PET/CT showed similar diagnostic accuracy of CT on per patient basis.

CONCLUSION

By a good overall diagnostic accuracy on per patients basis and on per region basis according to PCI, CT should be considered the imaging modality of choice in patients affected by PM.

CLINICAL RELEVANCE/APPLICATION

The role of imaging in detection of peritoneal metastases (PM) is still under debate. A systematic evaluation of diagnostic yield of imaging modality is required to provide a better evidence-based advice to physicians in this area. CT should be considered the imaging modality of choice in patients affected by PM. Because of the good overall diagnostic accuracy on per region basis according to PCI, CT may lead surgeons to refer the patient to the best treatment option. MRI and PET/CT, at the moment, should be considered second choices and further investigations are recommended.

SSC05-05 Computed Tomography (CT) in the Emergency Department: A Real-Time Study of Changes in Physician Decision-Making

Monday, Nov. 30 11:10AM - 11:20AM Location: S102D

Participants

Pari Pandharipande, MD, MPH, Boston, MA (*Presenter*) Nothing to Disclose
Andrew T. Reisner, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
William D. Binder, MD, Providence, RI (*Abstract Co-Author*) Nothing to Disclose
Atif Zaheer, MD, Baltimore, MD (*Abstract Co-Author*) Nothing to Disclose
Martin L. Gunn, MBChB, Seattle, WA (*Abstract Co-Author*) Research support, Koninklijke Philips NV; Spouse, Consultant, Wolters Kluwer NV; Medical Advisor, TransformativeMed, Inc;
Ken F. Linnau, MD, MS, Seattle, WA (*Abstract Co-Author*) Speaker, Siemens AG; Royalties, Cambridge University Press;
Chad M. Miller, MD, Durham, NC (*Abstract Co-Author*) Nothing to Disclose
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Emily C. Dowling, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Hani H. Abujudeh, MD, MBA, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Jonathan D. Eisenberg, BA, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Elkan F. Halpern, PhD, Boston, MA (*Abstract Co-Author*) Research Consultant, Hologic, Inc
Karen Donelan, DSc, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
G. Scott Gazelle, MD, PhD, Boston, MA (*Abstract Co-Author*) Consultant, General Electric Company Consultant, Marval Biosciences Inc

PURPOSE

To determine how physicians' diagnoses, diagnostic uncertainty, and management decisions are affected by CT in emergency department (ED) settings.

METHOD AND MATERIALS

In this prospective, four-center study, ED patients referred to CT with abdominal pain, chest pain/dyspnea, or headache were identified. Before CT, physicians were surveyed to obtain their leading diagnosis, diagnostic confidence (0-100%), an alternative "rule out" diagnosis, and management plan (were CT not available). After CT, surveys were repeated. Primary measures included proportions of patients for which leading diagnoses or admission decisions changed, and median changes in diagnostic confidence. Secondary measures addressed alternative diagnoses and return-to-care visits (e.g. to the ED) at one-month follow-up. Regression analysis identified associations between primary measures and site and participant (physician and patient) characteristics.

RESULTS

Paired surveys were completed for 1503 patients by 265 physicians. For abdominal pain, chest pain/dyspnea, and headache, leading diagnoses changed in 51% (278/545), 44% (208/471), and 25% (122/487) of patients. Pre-CT diagnostic confidence was consistently, inversely associated with the likelihood of a diagnostic change ($p < 0.0001$). Median changes in confidence were substantial (+25%, +20%, +13% ($p < 0.0001$)); median Post-CT confidence was high (95%, 93%, 95%) (Fig. 1). When reported, CT helped to confirm or exclude 'rule out' diagnoses in 95% or more of patients (96% (411/428), 97% (382/393), 95% (392/414)). Admission decisions changed in 25% (134/542), 18% (86/471), and 20% (94/480) of patients. During follow-up, 15% (82/545), 14% (64/471), and 10% (50/487) of patients returned for the same indication. Results correlated with site and participant characteristics in isolated circumstances.

CONCLUSION

Physicians' diagnoses and admission decisions changed frequently after CT, and valid diagnostic uncertainty was alleviated. These findings suggest that current ordering practices are clinically justified.

CLINICAL RELEVANCE/APPLICATION

For common referral indications to CT in emergency department settings, physicians' diagnoses and admission decisions change frequently after CT, and valid diagnostic uncertainty is alleviated; these findings suggest that current ordering practices are clinically justified.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Atif Zaheer, MD - 2012 Honored Educator

SSC05-06 Quenching MRI Anxiety: Complementary Alternative Medicine for Magnetic Resonance Imaging Anxiety

Monday, Nov. 30 11:20AM - 11:30AM Location: S102D

Participants

Selena I. Glenn, MA, BSRT, Portland, OR (*Presenter*) Nothing to Disclose

PURPOSE

Claustrophobia during MRI exams is a problem in imaging departments worldwide causing prematurely cancelled exams with financial losses to medical facilities and delays patient care. A pilot study was conducted hypothesizing complementary alternative medicine (CAM) modalities aromatherapy and breathing techniques would decrease patient anxiety.

METHOD AND MATERIALS

Thirty eight claustrophobic patients participated. They were four study arms, two experimental and two control groups. Experimental arms included participants who used anxiety medication (n=5), and non-medicated (n=13). The control arms included participants who used anxiety medication (n=8) and, non-medicated (n=12). All scans except one were performed on a 1.5T wide short bore scanner, and were of the hip region and above. Aromatherapy and breathing techniques was performed by the experimental groups just before entering scanner bore. The control group was provided standard care and sham aromatherapy. Study theoretical schools of thoughts were integrative medicine and mixing humanistic and cognitive therapy methods. Study design was concurrent triangulation mixed methods. Quantitative data included Likert scales, physiological data and were analyzed using an exact distributions based test, and regression analysis respectively. Qualitative data included open ended questions analyzed by mapping common themes and quantified for histogram analysis.

RESULTS

A 76.5% statistically significant ($p = .02 < 0.05$) reduction in anxiety from pre scan anxiety to post CAM treatment in experimental groups, while control group experienced a statistically insignificant 66.7% ($p = .12 > 0.05$) anxiety reduction. Likewise there was a 76.5% ($p = 0.02 < 0.05$) average anxiety reduction in the experimental group during the MRI compared to pre scan levels, while control group anxiety reduction was not statistically significantly ($p = 0.69 > 0.05$). Qualitative data findings were 33% of experimental group said their anxiety was reduced, compared to 22% of the control group. Physiological data showed that as the heart rate increased the average anxiety increased.

CONCLUSION

Aromatherapy and breathing techniques may reduce anxiety during MRIs.

CLINICAL RELEVANCE/APPLICATION

Fewer cancelled MRI exams with cost savings to medical facilities. Less interrupted medical treatment increasing patient care quality. A low cost skill based intervention for technologists.

SSC05-07 **Quest for More Personalized Lung Cancer Screening Strategy: Proximity of Smoking Cessation as a Predictor of Lung Cancer Events in High-risk Individuals Selected for Screening, Analysis with Propensity Score**

Monday, Nov. 30 11:30AM - 11:40AM Location: S102D

Participants

Recai Aktay, MD, Pepper Pike, OH (*Presenter*) Nothing to Disclose
Pingfu Fu, Cleveland, OH (*Abstract Co-Author*) Nothing to Disclose
Thomas Love, Cleveland, OH (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Purpose: To determine if proximity of smoking cessation (PoSC) is a predictor of incremental lung cancer events (LCE) among those already selected for lung cancer screening (LCS).

METHOD AND MATERIALS

Methods and Materials: We stratified National Lung Screening Trial (NLST) cohort by PoSC (time from SC to randomization) into three groups (>10 yrs and <5 identifying "remote-" and "recent-quitters" respectively). For each case, we estimated the propensity (PS) for remote-quitter using multivariable logistic regression (LR) -with 34 variables. From remote- (n=8,361) and recent-quitters (n=9,435), we produced 6,866 unique pairs of "remote-" and "recent-quitter" cases using PS matching. In the matched, and the entire groups of former smokers (FS) (n=27,692), we estimated the association between PoSC and incidences of LC and LC-death (LCD) using LR and restricted spline fit (RSF) of PoSC. We tested the models' goodness of fit (GOF) in quantiles of predicted probabilities and calculated the area-under-the-curve (AUC) in ROC analysis for predictive performance.

RESULTS

Results: In the FS group, there were 149:331 respective LCD:LC cases of recent- and 98:205 cases of remote-quitters compared to 102:244 and 69:145 LCD:LC cases respectively in the matched group. Recent-quitters were 71% more likely to have LC ($OR=1.71; 95\%CI=1.39-2.12$) and 50% more LCD ($OR=1.50; 95\%CI=1.10-2.06$) in the follow-up. Each proximate yr of SC is associated with 4.8% increased risk for LC ($OR=1.048; 95\%CI=1.032-1.065$) and 4.5% for LCD ($OR=1.045; 95\%CI=1.021-1.070$). On RSF, PoSC had significant ($P<0.001$ for LC and LCD), and linear associations with LC ($P=0.788$) and LCD ($P=0.086$). Validated and calibrated LR models predicted LC and LCD with AUCs of 0.64 and 0.66 respectively with favorable GOF ($P=0.739$ for LC and 0.095 for LCD).

CONCLUSION

Conclusion: In those already selected for LCS, the proximity of SC is linearly associated with increased risk for LCEs. Time-to-event analyses would explore the clinical usefulness of these relationships.

CLINICAL RELEVANCE/APPLICATION

Clinical Relevance: A personalized LCS strategy may be devised through a second-round of risk profiling of those selected for LCS and PoSC may be used as one of the risk predictors in this endeavor.

SSC05-08 **Quest for More Personalized Lung Cancer Screening Strategy: Age Older Than 54 Years as a Predictor of Lung Cancer Events in Individuals Selected for Screening**

Monday, Nov. 30 11:40AM - 11:50AM Location: S102D

Participants

Recai Aktay, MD, Pepper Pike, OH (*Presenter*) Nothing to Disclose
Pingfu Fu, Cleveland, OH (*Abstract Co-Author*) Nothing to Disclose
Thomas Love, Cleveland, OH (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Purpose: To determine if age can increment the prediction of lung cancer events (LCE) in individuals who are already selected for lung cancer screening (LCS).

METHOD AND MATERIALS

Methods and Materials: We stratified the National Lung Screening Trial cohort by age into three groups (≥ 64 years and 54-59 identifying "senior-" and "young-group" respectively). For each case, we estimated the propensity (PS) for senior-group using multivariable regression (LR) -with 34 variables such as socio-demographic, exposure history,... From senior- (n=16,958) and young-groups (n=18,844), we produced 12,034 unique pairs of "senior" and "young" cases using PS matching. In the matched, and the entire cohort (n=53,452), we estimated the association between participants' age and incidences of LC and LC-death (LCD) using LR and restricted spline fit (RSF) of age. We tested the models' goodness of fit (GOF) in quantiles of predicted probabilities and calculated the area-under-the-curve (AUC) in ROC analysis for predictive performance.

RESULTS

Results: In the entire group, there were 519:1016 and 203:422 respective LCD:LC cases in the senior- and the young-group respectively and in the matched group, 356:712 cases were senior and 129:286 cases were young. Seniors were more likely -than young- to have LC (OR=2.58;95%CI=2.24-2.97) and LCD (OR=2.78;95%CI=2.27-3.42) in the follow-up. In the entire group, LR showed 8.7% increased risk of LC (OR=1.087; 95%CI=1.077-1.096) per year of age, however, this relationship was non-linear (P=0.0237) on RSF. For LCD, the risk increment was 8.9% per year (OR=1.089;95%CI=1.076-1.103) and this was linear (P=0.842) and significant (P<0.001). Calibrated LR with RSF predicted LC and LCD with AUCs of 0.63 and 0.68 respectively. GOF test was favorable with P-value of 0.421 for LC and 0.760 for LCD.

CONCLUSION

Conclusion: In those selected for LCS, age is a predictor of incremental LCEs. However, further time-to-event analyses are needed to determine the method for its potential clinical use.

CLINICAL RELEVANCE/APPLICATION

Clinical Relevance: In those already selected for LCS, a second-round of risk profiling may allow the LCS strategy to be personalized and age may be used as one of the predictors of LCEs in this process.

SSC05-09 Health Service, Policy and Research Keynote Speaker: Cost-effective Analyses

Monday, Nov. 30 11:50AM - 12:00PM Location: S102D

Participants

Marta E. Heilbrun, MD, Salt Lake City, UT (*Presenter*) Nothing to Disclose

Health Service, Policy and Research Monday Poster Discussions

Monday, Nov. 30 12:15PM - 12:45PM Location: HP Community, Learning Center

HP

AMA PRA Category 1 Credit™: .50

Participants

Christoph I. Lee, MD, Los Angeles, CA (*Moderator*) Nothing to Disclose
 Janie M. Lee, MD, Bellevue, WA (*Moderator*) Nothing to Disclose

Sub-Events**HP206-SD- MOA1 Frequency and Follow-up of Focal Masses Coded as Indeterminate or Suspicious in the Liver, Pancreas Kidney and Adrenals on Cross Sectional Imaging**

Station #1

Participants

Philipose G. Mulugeta, MD, Philadelphia, PA (*Presenter*) Nothing to Disclose
 Caroline Sloan, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose
 Denise Petersen, BSN, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose
 Darco Lalevic, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose
 Tessa S. Cook, MD, PhD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose
 Hanna M. Zafar, MD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose

CONCLUSION

Further research is needed on the outcomes of indeterminate masses in the liver and kidney followed through imaging. High rates of malignancy among focal masses in the kidney support aggressive follow-up of these lesions. Providers of patients with suspicious masses and no follow-up should be contacted to determine the reason.

Background

Focal masses possibly representing cancer are commonly discovered in patients referred for abdominal imaging. Yet variations in the frequency of these findings by organ and of their follow-up are poorly understood.

Evaluation

In July 2013 a mandatory coding scheme was implemented for reporting the malignant likelihood of focal masses in the liver, pancreas, kidneys and adrenals on all abdominal CT, MRI and ultrasound exams. Focal masses coded as indeterminate or suspicious were detected in 590 organs among 9% (508/5843) of unique patients who received abdominal imaging between 7/1/13 and 9/30/13. Indeterminate masses were more common than suspicious masses (459/590, 78%); mainly located in the liver (162/590, 27%) and kidney (167/590, 28%). Chart review performed 15 months after initial detection revealed that indeterminate masses commonly resulted in imaging follow-up (231/590, 40% overall, 78/590, 13% liver, 83/590, 14% kidney) and suspicious findings in biopsy or surgery follow-up (42/590, 7%, overall, 10/509, 2% liver, 22/509, 4% kidney). Nearly half of all pathology follow up was in the kidney (27/55, 49%), revealing malignancy in 31% of cases (17/55). 7% of suspicious masses (42/509) received no imaging or pathology follow-up.

Discussion

Indeterminate and suspicious masses are commonly detected in the liver and kidney, generating imaging and pathology follow-up respectively. Focal masses in the kidney are likely to undergo biopsy or surgery, nearly one third of which reveal malignancy. 7% of suspicious masses receive no imaging or pathology follow-up, leaving these patients potentially at risk for missed or delayed cancer diagnosis.

HP207-SD- MOA2 Trends in Breast Cancer Screening: Impact of Early Medicaid Expansion

Station #2

Awards**Trainee Research Prize - Resident****Participants**

Soudabeh Fazeli Dehkordy, MD, MPH, Ann Arbor, MI (*Presenter*) Nothing to Disclose
 Kelli Hall, PhD, Ann Arbor, MI (*Abstract Co-Author*) Nothing to Disclose
 Brady West, PhD, Ann Arbor, MI (*Abstract Co-Author*) Nothing to Disclose
 Vanessa Dalton, MD, Ann Arbor, MI (*Abstract Co-Author*) Nothing to Disclose
 Ruth C. Carlos, MD, MS, Ann Arbor, MI (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

The Affordable Care Act (ACA) has resulted in sweeping changes in how we provide health insurance for the average American. To implement the coverage mandate, some states have responded by expanding Medicaid coverage. California, Connecticut, Minnesota, New Jersey, Washington, and District of Columbia were considered early expanders, implementing their programs by 2011. We sought to determine whether expansion of access to health insurance in these early expansion states has resulted in improved breast cancer screening adherence, particularly among low-income individuals, for whom the ACA represented potentially large expanded access.

METHOD AND MATERIALS

Data from the 2008 and 2012 Behavioral Risk Factor Surveillance System was used to compare Self-reported screening

mammography adherence by state expansion status and by survey year for all sample and low-income women. Logistic regression models were also used to estimate self-reported screening outcome as a function of state Medicaid expansion status, controlling for age, race, education, and income.

RESULTS

In 2008, screening mammography adherence reached 78.5% among women 40-70 in early expansion states compared to non-expansion states (76.3, $p=0.0002$). In 2012, rates declined in both groups, with screening remaining higher in expansion states (77.0% vs 73.5, $p<0.0001$). In low income women, similar rates of decline were identified between 2008 and 2012 regardless of expansion status. Despite the overall decline in screening rates between 2008 and 2012, when adjusting for age, race, education, and income, low-income women in expansion states were 25% ($p=0.006$) more likely to adhere to screening in 2012 compared to 2008.

CONCLUSION

In states with early Medicaid expansion breast cancer screening adherence has improved in precisely the population who would benefit the most from the ACA. Adoption of expansion by more states can result in considerable improvement of income disparities in breast cancer screening.

CLINICAL RELEVANCE/APPLICATION

Lack of health insurance results in disparities in breast cancer screening. Affordable Care Act (ACA) intends to reduce the number of uninsured by providing a more extended coverage through Medicaid expansion.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Ruth C. Carlos, MD, MS - 2015 Honored Educator

HP208-SD- MOA3 Rating Dr. Youtube: A Systematic Semi-quantitative Analysis of the Quality of Internet Videos Pertaining to the Radiation Risks of Diagnostic Imaging

Station #3

Participants

Kedar Patil, MD, Montreal, QC (*Presenter*) Nothing to Disclose

Michelle Zhang, MD, Montreal, QC (*Abstract Co-Author*) Nothing to Disclose

Jeffrey Chankowsky, MD, Montreal West, QC (*Abstract Co-Author*) Nothing to Disclose

Caroline Reinhold, MD, MSc, Montreal, QC (*Abstract Co-Author*) Consultant, GlaxoSmithKline plc

PURPOSE

Youtube.com, which exceeds one billion users worldwide, holds immense potential for medical professionals to educate the general public, yet the quality of radiology information within the Internet video database has not yet been systematically assessed. The purpose of this research is to determine the quality of Youtube videos pertaining to the radiation risks of diagnostic imaging (specifically radiography, computed tomography, and mammography) through a systematic semi-quantitative cross-sectional analysis.

METHOD AND MATERIALS

The Youtube database (February 14, 2005-March 29, 2015) was searched using a systematic approach. Search words included colloquial terms: "X ray," "CT scan," "mammogram," "medical imaging," "radiology," "radiation," "cancer," "risk," "harm," and "danger." The quality of each selected video was given a semi-quantitative score based on 10 defined parameters, related to "Scientific Merit" and "Audience Engagement," by two reviewers with three years of radiology experience, blinded to each other's scoring.

RESULTS

The Youtube search retrieved 607 unique videos. 77 videos were selected for analysis after the exclusion criteria were applied, totaling 8.61 hours of content. For "Scientific Merit," there were 9/77 (12%) "Good" videos, 24/77 (31%) rated as "Fair," and 44/77 (57%) "Poor". Inaccurate or misleading information was included in 18/77 videos (23%), 12 of which were specifically related to mammography, yet they effectively earned 32% of total viewership (35942/112549 views). A radiologist was clearly identified in 20/77 videos (26%), whereas only 8/77 (10%) videos explicitly stated the radiologist's role in radiation safety.

CONCLUSION

Youtube offers an inexpensive and accessible tool to provide the general public with vital medical information. This systematic analysis demonstrates that there is a paucity of quality Youtube videos related to radiation risks in diagnostic imaging. This study not only identifies the need for more accurate videos, which can effectively engage and educate a large audience, but it also presents a crucial opportunity for the radiology profession to increase its visibility and validate its role in patient care worldwide.

CLINICAL RELEVANCE/APPLICATION

The Youtube Internet video database is deficient in quality material pertaining to the radiation risks of diagnostic imaging.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Caroline Reinhold, MD, MSc - 2013 Honored Educator

Caroline Reinhold, MD, MSc - 2014 Honored Educator

HP209-SD- MOA4 Quest for More Personalized Lung Cancer Screening Strategy: Does Cigarette Smoking in Excess of 30 Pack-years Incrementally Predict Lung Cancer Events?

Station #4

Participants

Recai Aktay, MD, Pepper Pike, OH (*Presenter*) Nothing to Disclose
Pingfu Fu, Cleveland, OH (*Abstract Co-Author*) Nothing to Disclose
Thomas Love, Cleveland, OH (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Purpose: To determine if smoking history (SH) of ≥ 30 pack-years (pkyrs) can incrementally predict lung cancer events (LCE) in NLST cohort.

METHOD AND MATERIALS

Methods and Materials: We stratified the National Lung Screening Trial (NLST) cohort by pkyrs into three groups (≥ 60 and 30-42 identifying "high-" and "low-smoker" respectively). For each case, we estimated the propensity (PS) for high-smoker using multivariable regression (LR) with 34 variables. From the high- (n=18,126) and low-smokers (n=19,112), we produced 12,048 unique pairs of "low-" and "high-smoker" cases using PS matching. In the matched, and the entire groups (n=53,452), we estimated the association between pkyr history and incidences of LC and LC-death (LCD) using LR and restricted spline fit (RSF) of pkyr - adjusted for PS and two unbalanced variables. We tested the models' goodness of fit (GOF) in quantiles of predicted probabilities. We calculated the area-under-the-curve (AUC) of ROC for predictive performance.

CONCLUSION

Conclusion: In NLST follow-up, SH of >30 pkyrs is a predictor of incremental risk for LCEs in those already selected for LCS. Time-to-event analyses would further explore its potential clinical use.

CLINICAL RELEVANCE/APPLICATION

Clinical Relevance: Pack-year SH may be used as a predictor of LCEs in a second-round of risk profiling of those already selected for LCS in order to tailor a personalized screening strategy.

HP210-SD- MOA5 Trends in Radiologists' Reimbursement: Is Workload Outpacing Payment?

Station #5

Participants

Manisha C. Patel, MD, Philadelphia, PA (*Presenter*) Nothing to Disclose
David C. Levin, MD, Philadelphia, PA (*Abstract Co-Author*) Consultant, HealthHelp, LLC; Board of Directors, Outpatient Imaging Affiliates, LLC
Laurence Parker, PhD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose
Vijay M. Rao, MD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Radiology reimbursements have declined sharply in recent years. At the same time, growth in utilization of imaging appears to have leveled off. In this environment, our purpose was to compare trends in payment to radiologists to their workload trends to see if an imbalance has developed.

METHOD AND MATERIALS

Nationwide Medicare Part B databases for 2001-2013 were reviewed. CPT codes for all noninvasive diagnostic imaging provided by radiologists were selected. Total professional component (PC) RVUs were assigned to each code each year and RVU rates per 1000 Medicare beneficiaries were calculated. PC RVU rates are a proxy for workload and cost. Total Medicare payment to radiologists for these services were determined.

RESULTS

The RVU rate per 1000 Medicare beneficiaries for all imaging services provided by radiologists rapidly increased from 1548 in 2001 to a peak of 2404 in 2009 (+55%). It then dropped to 2243 in 2010, but generally leveled off for the next 3 years, reaching 2218 in 2013 (-8% vs peak). Total Medicare payment to radiologists in billions rapidly increased from 3.419 in 2001 to a peak of 5.300 in 2006 (+55%), after which it dropped abruptly in 2007 to 4.565. It then gradually decreased to 4.224 in 2013 (-20% vs peak). The overall increase in PC RVU rates from 2001 to 2013 was 43%; the overall increase in total Medicare payments was 24%.

CONCLUSION

Radiologists' workload increased by more than 50% from 2001 to 2009. It then dropped somewhat in 2010 but leveled off thereafter, reaching a point 8% below peak in 2013. Radiologists' Medicare reimbursement also rose rapidly through 2006, but then dropped sharply in 2007. Thereafter there was a general downtrend, such that by 2013, their reimbursement had declined by 20% vs the peak year of 2006. During the entire 2001-2013 period, the increase in radiologists' workload was almost double their increase in reimbursement (43% vs 24%). There is a clear imbalance: radiologists' workload grew considerably faster than their reimbursements over the entire study period, while in the downturn of the last few years, they saw a considerably greater drop in reimbursement than in workload.

CLINICAL RELEVANCE/APPLICATION

NA

**HP105-ED-
MOA6** **The ABC's of ACO's - Understanding the Basics of Accountable Care and Strategies for Thriving in an ACO Framework**

Station #6

Participants

Jonathan A. Flug, MD, MBA, Aurora, CO (*Presenter*) Nothing to Disclose

Stuart L. Cohen, MD, Manhasset, NY (*Abstract Co-Author*) Nothing to Disclose

Jason C. Hoffmann, MD, Mineola, NY (*Abstract Co-Author*) Consultant, Merit Medical Systems, Inc; Speakers Bureau, Merit Medical Systems, Inc

TEACHING POINTS

1. Multiple different types of payment models exist under the Patient Protection and Affordable Care Act with recent updates to the legislation. It is important for the radiologist to understand the nuances of these payment models as they continue to grow in prevalence. 2. The majority of radiology groups existing in current ACO frameworks have not experienced a significant change in their daily workflow. Despite this, it is important for the radiologist to be prepared when legislative pressures may force a change in the way radiology is practiced today in most settings.

TABLE OF CONTENTS/OUTLINE

Background of PPACA and the previous shared payment models in the US
Overview of the different payment models under PPACA
Current changes introduced in the recent final rule
How radiology groups have fit into the ACO framework
Keys for success
Conclusion

Health Service, Policy and Research Monday Poster Discussions

Monday, Nov. 30 12:45PM - 1:15PM Location: HP Community, Learning Center

HP

AMA PRA Category 1 Credit™: .50

Participants

Christoph I. Lee, MD, Los Angeles, CA (*Moderator*) Nothing to Disclose
 Janie M. Lee, MD, Bellevue, WA (*Moderator*) Nothing to Disclose

Sub-Events**HP211-SD- Is Iodinated Contrast Material Really Nephrotoxic? Questioning a Widespread Belief MOB1**

Station #1

Participants

Xavier Gallardo, MD, Sabadell, Spain (*Presenter*) Nothing to Disclose
 Jaume Almirall, Sabadell, Spain (*Abstract Co-Author*) Nothing to Disclose
 Beatriz Consola, MD, Sabadell, Spain (*Abstract Co-Author*) Nothing to Disclose
 Eva Castaner, MD, Sabadell, Spain (*Abstract Co-Author*) Nothing to Disclose
 Marta Andreu, MD, Sabadell, Spain (*Abstract Co-Author*) Nothing to Disclose
 Elena Gonzalez, Sabadell, Spain (*Abstract Co-Author*) Nothing to Disclose
 Jose Ramon Fortuno Andres, Sabadell, Spain (*Abstract Co-Author*) Nothing to Disclose
 Josep Maria Mata, MD, PhD, Sabadell, Spain (*Abstract Co-Author*) Nothing to Disclose
 Maria Rosa Safont, Sabadell, Spain (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To determine the effect of intravenous iodinated contrast agents on renal function in patients with chronic renal failure when there is no acute disease that can interfere.

METHOD AND MATERIALS

This prospective observational study analyzed the variation in creatinine levels in patients with chronic renal failure in relation with intravenous administration of iodinated contrast agents. We included all patients with chronic renal failure (creatinine clearance <60ml/min by the CKD-EPI Equation) without acute disease referred for follow-up CT for aortic aneurysm or aortic endoprotheses who provided informed consent. We recorded creatinine levels at baseline and 48-72 hours after contrast-enhanced CT. We defined contrast-induced nephropathy (CIN) as a 25% increase in serum creatinine levels from baseline.

RESULTS

From 2010 to 2014, 86 patients (all men; mean age 77.4 y, range 59-95) met the inclusion criteria. Classified by estimated baseline glomerular filtration rate [eGFR]: G3a (45-59 mL/min per 1.73 m²): 39 patients (45.3%) G3b (30-44 mL/min per 1.73 m²): 33 (38.3%) G4 (15-29 mL/min per 1.73 m²): 10 (11.6%) G5 (<15 mL/min per 1.73 m²): 4 (4.6%) None of the patients met the 25% increase in serum creatinine levels criterion for CIN.

CONCLUSION

In patients with chronic renal failure without acute disease, intravenous iodinated contrast material has no nephrotoxic effect.

CLINICAL RELEVANCE/APPLICATION

Intravenous iodinated contrast is less nephrotoxic than previously thought. Many cases reported as CIN were probably secondary to patients' acute diseases. Forgoing the radiological information added by contrast administration in chronic renal failure patients may be a mistake.

HP212-SD- Radiology: Has the Time Come for Increasing Patient Interaction? MOB2

Station #2

Participants

Alexandra Roudenko, MD, New York, NY (*Presenter*) Nothing to Disclose
 Nii O. Koney, MD, MBA, New York, NY (*Abstract Co-Author*) Nothing to Disclose
 Maryann Ro, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
 Sumeet Bahl, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
 Alexander C. Kagen, MD, New York, NY (*Abstract Co-Author*) Speakers Bureau, Bayer AG

PURPOSE

We live in an increasingly fast paced, interconnected world where information is readily available at the swipe of a finger - yet patients are asked to wait for days or even weeks to learn results of imaging studies directly from their referring doctors. Several studies have explored arguments for and against an expanded role for radiologists to directly interact and provide imaging findings to patients. Most studies have focused on the perspective of patients or their referring physicians. Few studies have explored the perspectives of both patients and referral physicians. The purpose of this study is to assess the views of both clinicians and patients in an urban tertiary center towards an expanded role for radiologists in direct patient care.

METHOD AND MATERIALS

An institutional review board waiver exemption was obtained for this HIPAA compliant study. Anonymous surveys were designed and distributed to adult patients obtaining imaging studies at our institution. A separate anonymous survey was designed and

distributed to referring physicians.

RESULTS

We received a total of 130 patient and 45 physician responses. 21% of our patient cohort correctly identified the role of a radiologist. 50% of all patients (73% of patients over age 61) indicated a preference for immediate imaging results. 84% of patients expressed an interest in being referred to a radiology clinic. 84% of patients expect to better understand their health through this interaction. A majority (55%) of patients in our cohort were not willing to pay for the service out of pocket. Although 82% of our clinician cohort indicated that there is a benefit to radiologist discussing imaging findings with patients, only 24% are comfortable with imaging findings being reported to patients at the time of imaging. A majority (68%) are likely to refer patients to a radiology clinic and 87% indicated an expected benefit of increasing patient involvement in their health.

CONCLUSION

Patients and clinicians at our institution perceive value in an expanded role for radiologists in the direct care of patients. Clinicians would prefer to refer patients to a radiology clinic rather than having findings reported to patients directly at the time of imaging.

CLINICAL RELEVANCE/APPLICATION

In our evolving healthcare delivery landscape, with a focus on multidisciplinary care and population health, patients and clinicians see a benefit to an expanded role for radiologist in direct patient care.

HP213-SD- MOB3 Developing Forensic Radiology: The Need for State-Of-The-Art Imaging in Post-Mortem Analysis

Station #3

Participants

Mohammed Hoque, MD, Jamaica Estates, NY (*Presenter*) Nothing to Disclose
Jay Shah, BA, MD, New York City, NY (*Abstract Co-Author*) Nothing to Disclose
Sarah Kantharia, MD, Brooklyn, NY (*Abstract Co-Author*) Nothing to Disclose
Eric F. Greif, DO, Huntington, NY (*Abstract Co-Author*) Nothing to Disclose
Donald Blair, DO, Bronx, NY (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

1 Evaluate radiologist's current role in forensic medicine. 2 Discuss the growing role of forensic imaging. 3 Discuss market demand and need for structured training in forensic radiology.

METHOD AND MATERIALS

The role of radiology in forensic science has continued to expand over the years. The value of forensic imaging is most apparent in traumatic deaths due to strangulation, drowning, or projectile objects. In traditional autopsies, dissecting difficult areas often distorts normal anatomy and leads to the loss of valuable information. Forensic imaging requires no tissue manipulation and allows for continuous reassessment of findings, which is useful in criminal cases. Even in cases where an autopsy may be necessary, imaging may help a pathologist plan a more accurate autopsy. The term "forensic radiology" is not recognized by the American Board of Radiology and without any available formal training programs, radiologists who incorporate forensics in their practice usually happen to stumble upon the field. Radiologists that dedicate most of their time to clinical practice may not be aware of imaging manifestations of a cadaver and are at risk of misinterpreting postmortem images.

RESULTS

Forensic pathologists now increasingly include radiographic findings in their reports and more institutions are investing in postmortem imaging. Studies have shown that 18% of traumatic injuries are diagnosed solely by postmortem imaging. In some cases, imaging may quickly identify the cause of death without the need for an autopsy. Autopsies are not covered by Medicare, Medicaid, and most insurance plans, and autopsies can cost up to \$5,000. Cost is one factor that has led to less autopsies being performed. Autopsies are performed in only 5% of hospital deaths and 40% of hospitals do not perform any autopsies. Postmortem imaging is about half as expensive as an autopsy and can provide results in a shorter period of time.

CONCLUSION

According to the most recent survey from ASRT, radiologists interpret 26.6% of postmortem imaging. With the demand for forensic imaging continuing to grow, formal and structured training will help more radiologists become experts in postmortem imaging manifestations.

CLINICAL RELEVANCE/APPLICATION

In light of the increasing demand and utilization of imaging by forensic pathologists, it behooves radiology as a discipline to introduce postmortem imaging into the curriculum of residency training programs and into academic practices.

HP214-SD- MOB4 Does Premedication Really Reduce Adverse Reactions after Gadolinium-based Contrast Injections?

Station #4

Participants

Marcio Ricardo T. Garcia, MD, Sao Paulo, Brazil (*Abstract Co-Author*) Nothing to Disclose
Erika Mantovani, Sao Paulo, Brazil (*Abstract Co-Author*) Nothing to Disclose
Elaine Guerra, Sao Paulo, Brazil (*Abstract Co-Author*) Nothing to Disclose
Ronaldo H. Baroni, MD, Sao Paulo, Brazil (*Presenter*) Nothing to Disclose
Marcelo B. Funari, MD, Ribeirao Pires, Brazil (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Compare the incidence of adverse reactions after injection of gadolinium-based contrast agents, before and after implementation of a premedication protocol.

METHOD AND MATERIALS

During an eight-month period (January to August 2012), we identified patients at two medical centers who were scheduled for contrast-enhanced MRI of the brain and spine. The patients were divided into two groups: those who received premedication and those who did not. The primary endpoint was the incidence of adverse reactions. The secondary endpoint was the need for medical intervention. The results of the study are presented in the abstract.

During an eight-month period (January to August 2013), we identified patients at increased risk for adverse reactions after contrast injection (asthma, previous mild reactions to gadolinium-based contrast, or severe reactions to other substances). These patients received premedication with oral antihistamines (fexofenadine hydrochloride) and corticoids (prednisone), 12 hours and 2 hours prior to the exam. A small percentage of patients, in an emergency setting, received an alternative scheme with intravenous premedication 1 hour before the exam (diphenhydramine and hydrocortisone). The same premedication protocol was repeated one year after (January to August 2014), and the incidence of overall and severe adverse reactions was compared to our previous database (January to August 2011). A chi-square with Yates correction test was used to compare the results ($p < 0.05$ considered for significance).

RESULTS

The number of patients that presented adverse reactions after gadolinium injection, in the same 8 months-period in 2011, 2013 and 2014 was 34, 16 and 13, respectively. The overall percentage of reactions was 0.44%, 0.20% and 0.15%, and the percentage of severe reactions was 0.091%, 0.013% and 0.012%, respectively for these 3 time-periods. In the first year of protocol, we observed a reduction of 54.5% in overall adverse reactions, and a reduction of 85.7% in severe reactions ($p < 0.05$). In the second year, similar percentages of reduction were observed (65.9% in overall adverse reactions, and 86.8% in severe reactions - $p < 0.05$).

CONCLUSION

The adoption of a premedication protocol in patients at risk significantly and consistently reduced the number of overall and severe reactions.

CLINICAL RELEVANCE/APPLICATION

Despite adverse reactions to gadolinium-based contrast agents are rare, the use of a premedication protocol significantly reduces the occurrence of reactions in patients at increased risk.

HP215-SD- MOB5 Analysis of Utilization Rate In a Medicaid Population Cohort of the Demographics of Medical Providers Ordering Cross Sectional Neuroimaging Procedures Related to a Clinical Decision Support System Through a Non-Denial Radiology Benefit Management

Station #5

Participants

Orest B. Boyko, MD, PhD, Los Angeles, CA (*Presenter*) Speakers Bureau, Bracco Group

Amit K. Gupta, Houston, TX (*Abstract Co-Author*) Employee, HealthHelp, LLC

Laryssa Boyko, BA, Los Angeles, CA (*Abstract Co-Author*) Nothing to Disclose

Adam C. Powell, PhD, Houston, TX (*Abstract Co-Author*) Researcher, HealthHelp, LLC; President, Payer+Provider Syndicate; Cofounder, ArxViva, Inc.

PURPOSE

To characterize the demographics of the medical providers and utilization rates who order cross-sectional neuroimaging for Medicaid patients and utilization in a non denial premise for authorization for a radiology benefit management (RBM) setting.

METHOD AND MATERIALS

Requests for pre-authorization of neuroimaging requests defined by CPT codes 70450, 70460, and 70470 for CT and 70551, 70552, and 70553 for MRI. The algorithm for authorization involved categories of Consensus (meets criteria), No Consensus (NC) (provider agrees to disagrees), Procedure Changed (PC) (provider agreement), and Withdrawn (W) (provider agreement). The time period reviewed was 4/11/2011 to 12/31/2014.

RESULTS

26,131 requests for neuroimaging, comprised of 7,307 CTs and 18,824 MRIs, were initiated for 22,242 unique patients. Neurologic specialists accounted for 82.6% of requests and nurse practitioners/physician assistants (NP/PA) 3.3%. Impact rate of NC, PC and W in total was for 2.7% for neurologic specialists and 5.6% for NP/PA. Withdrawal rate was higher in the NP/PA group (2.6% vs 1.8%).

CONCLUSION

In a non denial RBM peer to peer and collaborative consultations applying a clinical decision support (CDS) algorithm results in a positive impact in appropriateness in clinical decision support for both the neurologic specialty provider group and NP/PA, a higher per centage impact higher in the NP/PA group. This initial analysis can assist in following any possible shift in provider ordering patterns among non-neuroscience subspecialist providers as the shift to additional Medicaid enrollees may arise under the Affordable Care Act, and possible educational strategies for ordering providers through the CDS initiative.

CLINICAL RELEVANCE/APPLICATION

Provide baseline analysis of medical providers ordering neuroimaging studies and their utilization in a Medicaid population to track future trends if any in provider demographic shifts under the Affordable Care Act.

HP111-ED- MOB6 Pitfalls During Management of Contrast Reactions and Contrast Reaction Mimic's - Avoiding Errors and Tips to Improve Patient Care

Station #6

Awards

Magna Cum Laude

Participants

Joseph Cavallo, MD, New Haven, CT (*Presenter*) Nothing to Disclose

Kyle E. Pfeifer, MD, New Haven, CT (*Abstract Co-Author*) Nothing to Disclose

Daniella Asch, MD, New Haven, CT (*Abstract Co-Author*) Nothing to Disclose

Jonathan D. Kirsch, MD, New Haven, CT (*Abstract Co-Author*) Nothing to Disclose

Jay K. Pahade, MD, New Haven, CT (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

1. Recognize the wide spectrum of potential reactions to contrast agents from mild physiologic reactions to life-threatening anaphylactoid like reactions. 2. Learn the most common errors that occur during management of moderate to severe reactions including appropriate route specific dosing of Epinephrine administration and use of Epinephrine IM auto-injectors. 3. Become familiar with the symptoms and management of commonly encountered contrast reaction mimics for patients while in a diagnostic radiology department.

TABLE OF CONTENTS/OUTLINE

1. Review contrast reaction guidelines and management algorithms for: Mild Reactions Moderate Reactions Severe Reactions Contrast Extravasation 2. Mistakes and Pitfalls: Common errors during contrast reaction treatment Epinephrine dose and concentration errors Epinephrine route administration errors Medication interactions (ex. Beta blockers) Embedded video demonstrations to highlight teaching points 3. Symptoms and treatment of potential mimics of contrast reactions Hypoglycemia Seizures Air embolism Vasovagal reactions Excessive narcotic administration ACS/Stroke

SSE12

ISP: Health Service, Policy and Research (Economic Analyses/Utilities)

Monday, Nov. 30 3:00PM - 4:00PM Location: S102D

HP

AMA PRA Category 1 Credit™: 1.00
ARRT Category A+ Credit: 1.00

Participants

Christoph I. Lee, MD, Los Angeles, CA (*Moderator*) Nothing to Disclose
Pari Pandharipande, MD, MPH, Boston, MA (*Moderator*) Nothing to Disclose

Sub-Events

SSE12-01 Health Service, Policy and Research Keynote Speaker: Increasing Transparency of Costs and Utilities Used in Cost-effectiveness Analyses

Monday, Nov. 30 3:00PM - 3:10PM Location: S102D

Participants

Christoph I. Lee, MD, Los Angeles, CA (*Presenter*) Nothing to Disclose

SSE12-02 Cost-effectiveness of Initial MRCP versus a Risk Stratification Algorithm for Management of Suspected Choledocholithiasis

Monday, Nov. 30 3:10PM - 3:20PM Location: S102D

Participants

David H. Hoffman, MD, New York, NY (*Presenter*) Nothing to Disclose
Scott Braithwaite, MD, MSc, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Stella Kang, MD, MSc, New York, NY (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

For symptomatic cholelithiasis, a number of diagnostic strategies with conflicting recommendations for MRCP have been proposed for evaluating suspected common duct (CD) stones. Our purpose was to analyze the cost-effectiveness of the American Society of Gastrointestinal Endoscopy (ASGE) risk stratification guidelines for triage to endoscopy or MRCP, versus uniform MRCP for all patients with suspected CD stones.

METHOD AND MATERIALS

A decision-analytic model was constructed to compare cost and effectiveness of three diagnostic strategies for suspected CD stones: non-contrast MRCP for all patients, contrast-enhanced MRCP for all patients, or application of ASGE criteria based on lab values and patient characteristics (contrast-enhanced MRCP for intermediate risk, ERCP for high risk, and no test for low risk of CD stones); analysis was performed from a societal perspective over a 1 year time horizon. The model accounted for benign or malignant causes of biliary obstruction and procedural complications as informed by the literature. Cost information was based on Medicare reimbursements. Sensitivity analysis assessed effects of parameter variability on model results.

RESULTS

Using the ASGE algorithm was less costly than initial non-contrast or contrast-enhanced MRCP (\$3577 versus \$3645, \$3767 respectively). Quality adjusted life years in all strategies were similar (0.947-0.949). ASGE guidelines provided the highest net monetary benefit (\$181 more than initial non-contrast MRCP). Results were most sensitive to probability of major procedural complication and cost of endoscopic procedures. Initial MRCP strategies were dominated, and initial non-contrast MRCP became the most cost-effective strategy only with probability of major procedural complication of ≥ 0.4 , and concurrent 85% reduction in cost with $\geq 95\%$ sensitivity and specificity.

CONCLUSION

The ASGE risk stratification criteria for suspected choledocholithiasis offers a cost-effective means of triaging patients to ERCP or MRCP, while initial MRCP is not cost-effective unless sensitivity and specificity are excellent at very low cost. Patients at high risk of procedural complication may benefit from initial MRCP regardless of ASGE classification, however.

CLINICAL RELEVANCE/APPLICATION

ASGE criteria for risk stratification in suspected choledocholithiasis provide a cost-effective triage tool to determine the need for MRCP versus direct endoscopic evaluation.

SSE12-03 Defining the Cost of Advanced Imaging Technology in Image-guided Radiation Therapy Using Time-driven Activity-based Costing

Monday, Nov. 30 3:20PM - 3:30PM Location: S102D

Participants

Nikhil G. Thaker, MD, Houston, TX (*Presenter*) Nothing to Disclose
Tharakeswara K. Bathala, MD, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Thomas Pugh, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Deborah A. Kuban, MD, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Rajat Kudchadker, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Usama Mahmood, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Ankit Agarwal, BS, Boston, MA (*Abstract Co-Author*) Nothing to Disclose

Teresa Bruno, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Jihong Wang, PhD, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
R. Jason Stafford, PhD, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Thomas W. Feeley, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Robert S. Kaplan, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Alexis Guzman, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Thomas A. Buchholz, MD, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
S. J. Frank, Houston, TX (*Abstract Co-Author*) Board Member, C4 Imaging LLC; Stockholder, C4 Imaging LLC; Advisory Board, Elekta AB

PURPOSE

Value-based healthcare holds promise of improving outcomes and reducing costs. Effective yet costly imaging technologies, such as MRI, will need to be evaluated in the context of how they improve outcomes or lower costs over the full cycle of care. Although providers have begun to measure outcomes, cost measurement remains a challenge. In this proof-of-principle study, we utilize time-driven activity-based costing (TDABC) to measure the cost of an MRI protocol compared to a traditional CT and ultrasound-based protocol in prostate brachytherapy (PB).

METHOD AND MATERIALS

Process maps of the traditional protocol and the MRI protocol were created from consultation to 1-year after PB. The MRI protocol utilizes one MRI scan for evaluation and treatment planning and a second scan for post-operative dosimetry, rather than CT and ultrasound scans in the traditional protocol. We identified the resource (personnel, equipment, or facility) and time in minutes required for each step in the care cycle. TDABC costs were calculated by multiplying time by the cost per minute at each step.

RESULTS

The largest cost drivers were the operating room (40-45% of total cost), treatment planning (9%), and consultation (6-8%). The two MRI protocol scans comprised 14% of the full cycle cost. Personnel comprised 72-77% of all costs, including the radiation oncologist (25%), anesthesiologist (11%), dosimetrist (10%), mid-level provider (5%), and radiologist (4%). The MRI scan was 2.4x more costly than the evaluation and planning CT and ultrasound scans. Full cycle cost from consultation through one year of follow-up after implantation was only 9.8% higher for the MRI protocol than the traditional protocol (Figure).

CONCLUSION

TDABC is a powerful cost accounting tool that can measure the true costs of imaging technologies. MRI holds promise of improving outcomes at modest cost increases to the provider. However, radiologists will need to measure both outcomes and cost over the full cycle of care, rather than over a specific intervention, to evaluate the value of care delivery. With the onset of bundled payments, providers will experience increasing pressure to enhance value, and costly technology will need to tangibly improve patient outcomes to be justified.

CLINICAL RELEVANCE/APPLICATION

TDABC can accurately measure the true cost of advanced imaging and image-guided technologies and is a vital component to enhancing the value of radiology.

SSE12-04 Imaging Decision Support Does Not Drive Out-of-Network Leakage of Referred Imaging

Monday, Nov. 30 3:30PM - 3:40PM Location: S102D

Participants

Anand M. Prabhakar, MD, Somerville, MA (*Presenter*) Nothing to Disclose
Alexander S. Misono, MD, MBA, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Ann Ewin, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
H. Benjamin Harvey, MD, JD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Nan Jones, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
James Heffernan, MBA, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
James A. Brink, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Sanjay Saini, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Decision support systems are an important step to ensuring appropriate imaging of patients. However, decision support could theoretically drive out-of-network leakage if ordering providers attempt to circumvent decision support recommendations by obtaining studies that received a low decision support appropriateness score from other imaging providers. We assessed the incidence of out-of-network leakage for imaging studies with low appropriateness scores.

METHOD AND MATERIALS

This study was IRB-approved and HIPAA compliant. We queried our outpatient decision support software system over a three year period (2011-2013) for studies that received a low decision support appropriateness score and then were canceled by the ordering physician. For patients meeting these criteria and participating in risk-shared contracts, we cross referenced their imaging utilization reports in the risk-contract insurance database to determine if they received outpatient imaging contrary to the decision support recommendation within 60 days of the index order. The demographics of these cases were analyzed for trends.

RESULTS

The risk-contract insurance database contained average of 63,378 patients/year (2011: 71,233; 2012: 58,644; 2013: 60,258) from three insurance companies. These patients had 18,008 MRIs and 18,014 CTs over the study period. The number of these studies that had a low decision support appropriateness score and were subsequently canceled were 2,350 CTs and 2,516 MRIs. 175 imaging studies were performed contrary to the decision support recommendation within 60 days of the index order, 74 (3.1%) CTs and 101 (4.0%) MRIs. 97.1% (170/175) of these studies were ultimately performed within our hospital system and only 2.9% (5/175) of studies were performed outside of our hospital system.

CONCLUSION

Decision support systems for ordering providers do not appear to drive imaging referrals out of hospital systems to other

Decision support systems for ordering providers do not appear to drive imaging referrals out of hospital systems to other institutions. Hospital systems can implement decision support without this fear.

CLINICAL RELEVANCE/APPLICATION

Implementing decision support systems for ordering providers does not drive out-of-network leakage of referred imaging.

SSE12-05 Impact of Hyperbolic Discounting on Preferences for Screening for Lung Cancer

Monday, Nov. 30 3:40PM - 3:50PM Location: S102D

Participants

Saurabh Jha, MD, Philadelphia, PA (*Presenter*) Speaker, Toshiba Corporation
A. C. Powell, PhD, Boston, MA (*Abstract Co-Author*) President, Payer+Provider Syndicate; Cofounder, ArxViva, Inc.; Researcher, HealthHelp, LLC

PURPOSE

To explore how preferences for screening for lung cancer are influenced by hyperbolic discounting. Behavioral economists have shown that individuals do not uniformly discount events in the near and far future. Instead, events in the far future are discounted at a higher rate than events in the near future. This is relevant to screening for lung cancer because the benefit of reduction in mortality from lung cancer is a far event whereas the harms of screening are a near event. The benefit/risk calculus can be affected by hyperbolic discounting.

METHOD AND MATERIALS

Time-variant preferences are explored using a decision model. Cohorts of smokers were modeled at ages 55, 65 and 75. A higher discount rate is applied to outcomes further in the future. Sensitivity analysis explores the effect of varying the differential in the discount rate (degree of hyperbolic discounting) and the risk of early complications of screening. Parameters have been extracted from the National Lung Screening Trial which reported an absolute risk reduction in mortality when screened by CT from lung cancer of 0.4 % over seven years, and an absolute increase in major complications of 0.24 % over sixty days.

RESULTS

Hyperbolic discounting affects the decision to be screened and when to be screened. Preferences are most sensitive at the bounds of the current recommended age range for screening. Framing the outcomes can lead to reversal of preferences.

CONCLUSION

Hyperbolic discounting affects the decision of smokers to be screened. Physicians counselling patients for screening for lung cancer should elicit this phenomenon and counsel patients about its presence, while respecting patient choice.

CLINICAL RELEVANCE/APPLICATION

We present a conceptual framework for understanding when screening might be foregone in order to enhance shared decision making process.

SSE12-06 Developing an Economic Strategy for Assessing Pregnancy-related Portable Ultrasound Use in Lower-income Countries: Guatemala, Kenya, Democratic Republic of Congo, Pakistan, and Zambia

Monday, Nov. 30 3:50PM - 4:00PM Location: S102D

Participants

Brian W. Bresnahan, PhD, Seattle, WA (*Presenter*) Stockholder, Johnson & Johnson;
Elisabeth Vodicka, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
Joseph B. Babigumira, PhD,MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
Robert O. Nathan, MD, MPH, Mercer Island, WA (*Abstract Co-Author*) Nothing to Disclose
Zoya Bauer, MD,PhD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
Jonathan Swanson, MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
David Swanson, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
Elizabeth M. McClure, PhD, Research Triangle Park, NC (*Abstract Co-Author*) Nothing to Disclose
Robert L. Goldenberg, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Louis P. Garrison, PhD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To assess the existing literature and to develop data collection strategies for conducting an economic evaluation alongside a randomized controlled trial studying portable ultrasound use to improve maternal and neonatal health in five lower-income countries.

METHOD AND MATERIALS

We assessed the published literature related to portable ultrasound use in lower-income settings and developed a conceptual model for an economic evaluation linked to a cluster-randomized trial conducted by the Global Network for Women's and Children's Health Research (Democratic Republic of Congo, Guatemala, Kenya, Pakistan, and Zambia). To evaluate resource use associated with sonographer training, antenatal care, and interventions for pregnancy-related complications, we developed a preliminary conceptual model along with use- and cost-targeted data collection forms.

RESULTS

Substantial evidence gaps were identified for large, multi-country clinical studies and there were no comprehensive economic evaluations of portable ultrasound use to improve maternal and neonatal health. Our mapping of care-delivery processes identified components for economic data collection: equipment, training and quality controls for sonographers, antenatal provider visits, and referrals to facilities for pregnancy-related complications, such as urgent or hospital-based care. Country characteristics and health system infrastructure, such as transportation, energy, cultural issues, and competing health programs were also deemed essential to consider for robust economic assessments. Resource use and cost-related data forms were developed and reviewed by sites/experts in participating countries to ensure the face validity, consistency, and appropriateness of our approach.

CONCLUSION

Literature reporting clinical or economic implications of maternal health portable ultrasound use in lower-income countries was limited. Economic evaluations should systematically assess clinical and financial impacts of ultrasound training/equipment, antenatal and follow-up care, identification and treatment of complications, as well as country-level infrastructure and burden on patients.

CLINICAL RELEVANCE/APPLICATION

Collecting trial-based clinical and economic data in lower-income countries will allow decision makers to compare costs and consequences of using portable ultrasound screening in maternal health.

Special Interest Session: Comparative Effectiveness Research: Payment and Policy Impact

Monday, Nov. 30 4:30PM - 6:00PM Location: S505AB

HPAMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credit: 0**Participants**Ruth C. Carlos, MD, MS, Ann Arbor, MI (*Moderator*) Nothing to DiscloseAlvin Mushlin, MD, New York, NY, (aim2001@med.comell.edu) (*Presenter*) Nothing to DiscloseJ. Sanford Schwartz, MD, Philadelphia, PA (*Presenter*) Research Consultant, Bayer AG; Research Consultant, Blue Cross and Blue Shield Associations; Research Consultant, Takeda Pharmaceutical Company Limited;C. Craig Blackmore, MD, MPH, Seattle, WA, (craig.blackmore@vmc.org) (*Presenter*) Royalties, Springer Science+Business Media Deutschland GmbH**LEARNING OBJECTIVES**

1) To enhance the imaging community's understanding of the impact of comparative effective research on payment, policy, and research funding decisions.

ABSTRACT

The Washington State Health Technology Assessment Program determines if specific medical technologies will be covered for individuals enrolled in Washington State Health Plans, representing about 25% of the individuals in the state. The program is designed to determine coverage explicitly based on evidence, rather than on political considerations or lobbying, and the decision of the committee are binding. The program has reviewed a substantial number of radiology technologies to date, with a mixed record of approval and non-approval. The greatest barrier to approval of coverage for radiology interventions is lack of evidence for effectiveness, safety, and cost-effectiveness. Evidence based policy decisions from groups like the Health Technology Assessment Program can potentially improve care quality and lower costs through non-coverage of ineffective interventions. However, use of evidence to drive coverage decisions highlights the limitations of the existing literature both in terms of the topics explored, and the methods deployed, and speaks to the great need for technology assessment and comparative effectiveness research.

Clinical Decision Support and Utilization Management: Preparing for the CMS 2017 Mandate

Tuesday, Dec. 1 8:30AM - 10:00AM Location: E451A

HPAMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50**Participants**Keith J. Dreyer, MD, PhD, Boston, MA (*Coordinator*) Co-Chairman, Medical Advisory Board, Merge/IBMKeith J. Dreyer, MD, PhD, Boston, MA (*Moderator*) Co-Chairman, Medical Advisory Board, Merge/IBMJeffrey B. Weilburg, MD, Boston, MA (*Presenter*) Nothing to DiscloseMark D. Hiatt, MD, MBA, Salt Lake City, UT, (mark.hiatt@regence.com) (*Presenter*) Medical Director, Regence BlueCross BlueShield;
Board Member, RadSite ; Former Officer, HealthHelp, LLCJoseph Hutter, Baltimore, MD (*Presenter*) Nothing to DiscloseJennifer K. Coleman, Traverse City, MI (*Presenter*) Nothing to Disclose**LEARNING OBJECTIVES**

1) Explain the need for assuring the appropriateness of ordered exams. 2) Know the role of utilization management in reducing inappropriate and unnecessary tests. 3) Identify the advantages and limitations of clinical decision support. 4) Recognize how payers are considering meeting the CMS mandate for pre-order decision support.

ABSTRACT

This course will discuss the 2017 CMS mandate for pre-order decision support for MRI, CT, and PET, including the need for assuring the appropriateness of ordered exams, the roles of utilization management and clinical decision support in reducing inappropriate and unnecessary tests, the advantages and limitations of methods to manage utilization, and how payers are considering meeting the CMS mandate for pre-order decision support.

URL

https://www.federalregister.gov/articles/search?conditions%5Bregulation_id_number%5D=0938-AS40

RC332

Aligning Incentives Along the Imaging Value Chain

Tuesday, Dec. 1 8:30AM - 10:00AM Location: S102C



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Geraldine B. McGinty, MD,MBA, New York, NY (*Presenter*) Nothing to Disclose

Richard Duszak JR, MD, Atlanta, GA (*Presenter*) Nothing to Disclose

Giles W. Boland, MD, Boston, MA (*Presenter*) Principal, Radiology Consulting Group; Royalties, Reed Elsevier

LEARNING OBJECTIVES

1) To understand value-focused healthcare imperatives in the evolution of healthcare delivery systems and how they impact medical imaging. 2) To implement practice changes aligned with Imaging 3.0 so as to maximize the relevance of radiology and radiologists in ongoing health system changes. 3) To improve the delivery of imaging care by focusing on value chain opportunities. (This course is part of the Leadership Track)

ABSTRACT

Although radiology's dramatic evolution over the last century has profoundly affected patient care for the better, our current system is fragmented with many providers focusing more on technology and physician needs rather than what really matters to patients: better value and outcomes. This latter dynamic is aligned with current national health care reform initiatives and creates both challenges and opportunities for radiologists to find ways to deliver new value for patients. The American College of Radiology has responded to this challenge with the introduction of Imaging 3.0, which represents a call to action to all radiologists to assume leadership roles in shaping America's future health care system through 5 key pillars: imaging appropriateness, quality, safety, efficiency, and satisfaction. That enhanced value will require modulation of imaging work processes best understood through the concept of the imaging value chain, which will be the focus of this course.

MSAS32

Economics in Imaging/Business Intelligence (Sponsored by the Associated Sciences Consortium) (An Interactive Session)

Tuesday, Dec. 1 10:30AM - 12:00PM Location: S105AB



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

William A. Undie, PhD, RT, Houston, TX (*Moderator*) Nothing to Disclose
Morris A. Stein, BArch, Phoenix, AZ (*Moderator*) Nothing to Disclose

Sub-Events

MSAS32A One Hospital's Experience: Tightening the Belts Using LEAN and Green Methodologies

Participants

Janet Champagne, MBA, RT, Houston, TX, (jlchampa@texaschildrens.org) (*Presenter*) Nothing to Disclose
Alex Koroll, Houston, TX (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Learn the value of implementing LEAN and Six Sigma Green Belt tools and processes to improve patient and employee satisfaction. 2) Demonstrate understanding of the seven elements of waste and apply methodologies to eliminate or improve its negative impact in your workflows. 3) Utilizing the Six Sigma processes to gain credibility and demonstrate value within the organization.

MSAS32B Using Evidence Based Design to Increase Operational and Planning Efficiencies

Participants

Carlos L. Amato, Los Angeles, CA (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Learn how to apply evidence based design planning and design principles to improve efficiency and patient satisfaction. 2) Understand how to plan an "intelligent" department that is flexible enough to deal with imaging complex processes and constant technology changes. 3) Understand why good design is good business.

SSG07

ISP: Health Service, Policy and Research (Miscellaneous)

Tuesday, Dec. 1 10:30AM - 12:00PM Location: S102D

HP

AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

David C. Levin, MD, Philadelphia, PA (*Moderator*) Consultant, HealthHelp, LLC; Board of Directors, Outpatient Imaging Affiliates, LLC
Kimberly E. Applegate, MD, MS, Zionsville, IN (*Moderator*) Nothing to Disclose

Sub-Events

SSG07-01 Health Service, Policy and Research Keynote Speaker: Will Use of Imaging Expand in the Near Future - Or Contract?

Tuesday, Dec. 1 10:30AM - 10:40AM Location: S102D

Participants

David C. Levin, MD, Philadelphia, PA (*Presenter*) Consultant, HealthHelp, LLC; Board of Directors, Outpatient Imaging Affiliates, LLC

SSG07-02 Access to Clinical Imaging Reports in Patient Portals and the Role of the Radiologist: The Patient Perspective

Tuesday, Dec. 1 10:40AM - 10:50AM Location: S102D

Participants

Eduardo Hernandez-Rangel, MD, Orange, CA (*Presenter*) Nothing to Disclose
Wanda Marfori, MD, Orange, CA (*Abstract Co-Author*) Nothing to Disclose
Alessandra Miranda, MD, Orange, CA (*Abstract Co-Author*) Nothing to Disclose
Mayil S. Krishnam, MBBS, MRCP, Orange, CA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To determine patient perspective in regard to 1) access to imaging reports in patient portals 2) how imaging results are received and communicated to them.

METHOD AND MATERIALS

Combined electronic/paper survey was administered to adult outpatients at UCIMC. Survey questions focused on: 1) accessibility and satisfaction with patient portal (PP) 2) information about imaging procedures and concerns 3) access to imaging reports 4) patient preference as to who would explain imaging test procedures and from whom they receive imaging results: PCP, ordering/referring physician, radiologist, NP, PA or nurse 5) and potential role of radiologists in communicating results. Results were tabulated and analyzed.

RESULTS

Total of 66 participants completed the survey, mean age: 54 ± 18 S.D.; 60% female, 40% male. 70% had college level education and insured (97%). 53% percent had access to PP, 85% were satisfied; 47% with no access would like to have one. 89.4% had recent and multiple (56%) imaging tests; individual tests mostly CT (10%). Procedures and risks explained by technicians (53%). Radiation exposure not a major concern (61%) and most (75%) were unaware of radiation reduction strategies. 17% were concerned with side effects, contrast allergy, cost, cancer, quality and diagnosis. Access to imaging report in PP was important (92%) and timely reporting (85%); having access will not create anxiety, stress or confusion. Patients prefer to discuss results with referring physician 48%, PCP 26%, radiologist 21%, other 5%. Question re: discussing results with Radiologist showed 57.6% preference, due to the following: first person who knows the findings, is the expert and will have more complete, better and accurate information. 34% prefer a discussion with radiologist immediately post-procedure, and access to results within 24 hours 34%.

CONCLUSION

Overall participants preferred and are satisfied with PP and want more control of their health information. There is preference for direct discussion with radiologist but timely access to imaging results via a PP, from referring physician, PCP, or radiologist is much more important rather than from whom they receive or discuss results with.

CLINICAL RELEVANCE/APPLICATION

Our project is in line with RSNA and ACR campaign for patient centered practice with goal of promoting awareness of radiologist role in patient care and benefits of direct interaction with patients

SSG07-03 Image-Rich Radiology Reports: A Value-Based Model to Improve Clinical Workflow

Tuesday, Dec. 1 10:50AM - 11:00AM Location: S102D

Participants

Bhavik N. Patel, MD,MBA, Durham, NC (*Presenter*) Nothing to Disclose
Jose Lopez, BS, Raleigh, NC (*Abstract Co-Author*) Nothing to Disclose
Christopher J. Roth, MD, Durham, NC (*Abstract Co-Author*) Nothing to Disclose
Rendon C. Nelson, MD, Durham, NC (*Abstract Co-Author*) Consultant, General Electric Company Consultant, Nemoto Kyorindo Co, Ltd Consultant, VoxelMetrix, LLC Research support, Bracco Group Research support, Becton, Dickinson and Company Speakers Bureau, Siemens AG Royalties, Wolters Kluwer nv

PURPOSE

To determine the clinical value of an image-rich radiology report (IRRR) by evaluating unmet needs, interest, and preferences of referring physicians and the willingness of radiologists to create them.

METHOD AND MATERIALS

Referring physicians and radiologists of various experience and from different specialties were interviewed in this prospective, HIPAA-compliant study. Willingness to voluntarily participate for interview was solicited via email. A single investigator conducted all interviews using standard questionnaires, one for clinicians and one for radiologists. All subjects were walked through a PowerPoint mockup demonstration of an IRRR and its potential use in clinical workflow. Three methods for viewing images were presented: 1) clicking hyperlinks to access a stacked image series popup, 2) embedded clickable image thumbnails, 3) scrollable but not enlargeable medium-sized image series within the report. Questionnaire answers, free comments, and general impressions were captured and analyzed.

RESULTS

A total of 44 physicians (33M, 11F, 36 clinicians, 8 radiologists) were interviewed. Number of years in practice was < 5 (27%), 5-9 (30%), 10-14 (9%), 15-19 (11%), and > 19 (23%). 31 (70%) clinicians expressed interest in using IRRR. Of these, 81% believed IRRR would improve communication. 29 and 26 subjects stated they would very frequently use IRRR for CT and MR images, respectively, while 10 would use it for ultrasound. With regards to how images are embedded, 10 (28%) preferred method 1, 18 (50%) preferred method 2, and 8 (22%) preferred method 3. 30 subjects (83%) stated IRRR would somewhat or substantially improve efficiency. 100% of radiologists believed IRRR was a valuable concept. 5 (63% preferred right clicking an image whereas 3 (38%) preferred pressing a function key to embed images. On the average, radiologists would be willing to spend 83 seconds per case to embed the images.

CONCLUSION

Referring physicians believe IRRR would add value by improving communication between them and radiologists as well as have some improvement on their time efficiency. Radiologists are open to providing IRRR so as long as the process of embedding images is expeditious.

CLINICAL RELEVANCE/APPLICATION

In the current era of transforming health care, novel solutions that increase value of radiology must be employed. IRRR may improve clinical workflow and communication between referring physicians and radiologists, ultimately translating into improved patient outcomes.

SSG07-04 Investigating Occult Malignancy in Patients with Unprovoked Venous Thromboembolism - A Single-centre Retrospective Study

Tuesday, Dec. 1 11:00AM - 11:10AM Location: S102D

Participants

Tarryn Carlsson, MBChB, Bristol, United Kingdom (*Presenter*) Nothing to Disclose

Babu Pusuluri, Bristol, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

John Ho, Bristol, United Kingdom (*Abstract Co-Author*) Speaker, Boehringer Ingelheim GmbH;

Ladli Chandratreya, MBBS, FRCR, Bristol, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

In June 2012 the National Institute for Health and Care Excellence (NICE) published guidelines for investigating occult malignancy (CG144: section 1.5) in patients diagnosed with unprovoked venous thromboembolism (VTE). Screening for cancer in these patients remains controversial and its survival benefit is yet to be proven. Our objectives are to determine the frequency of unprovoked VTE in our institution, assess the way we investigate these patients for occult malignancy and to determine the frequency of occult malignancies in this group of patients.

RESULTS

740 investigations were undertaken to investigate a possible diagnosis of VTE of which only 108 were positive (15%). Further analysis showed that 60.2% (n = 65) were provoked, 37% (n = 40) were unprovoked and 3% (n = 3) could not be categorised. The age range of patients diagnosed with an unprovoked VTE was between 27-94 years old with a mean age of 65 years. The majority were male (n= 24). In the unprovoked VTE category 69.2% (n = 27) had a physical examination; 97.4% (n = 38) had a FBC; 84.6% (n = 33) had LFTs; 48.7% (n = 19) had a serum calcium and only 33.3% (n = 13) had a urinalysis performed within one month of the initial VTE investigation. In those patients who had a lower limb deep vein thrombosis (DVT), only 47.1% (n = 8/17) had a chest radiograph performed within one month of the VTE diagnosis. Computed Tomography (CT) of the abdomen and pelvis was performed in 57.9% (n = 22) of patients with an unprovoked VTE and 17.9% (n = 7) underwent ultrasound of the abdomen/pelvis. No further imaging was performed in 31.2% (n = 12). Of note, no mammograms were performed. In patients that went on to have cross-sectional imaging, all of them had a FBC, 86.4% had LFTs, 54.5% had a serum calcium and only 36.4% had a urinalysis performed. An occult malignancy was only identified in 2.9% (n = 1). This patient was shown to have an enlarged prostate on cross-sectional imaging of the abdomen and pelvis and a raised serum prostate specific antigen (PSA). Subsequent biopsy proved positive for prostate malignancy. Ultrasound did not detect any occult malignancies.

CONCLUSION

Invasive radiological investigations are not without significant morbidity. A normal physical examination, basic blood work up (FBC, LFTs, serum calcium), CXR and urinalysis may reasonably obviate the need for unnecessary invasive radiological investigations for unprovoked VTE. Patients in our study did not have satisfactory baseline investigations before being subjected to more invasive investigations such as cross sectional CT imaging, V/Q scan or mammography as recommended by NICE. Interestingly, the rate of occult malignancies in our study is very low (2.9%), which begs the question whether cross-sectional imaging/mammography is warranted at all in these patients. A further study evaluating the final outcome of the subgroup that did not undergo invasive investigation may throw additional light on this question. Based on our observations, we recommend that patients with unprovoked VTE should have a physical examination and baseline investigations (as per NICE guideline) before being considered for invasive radiological investigations.

METHODS

In this retrospective, observational study, patients who underwent a Computed Tomography Pulmonary Angiogram (CTPA), ventilation/perfusion (V/Q) scan or unilateral lower limb Doppler over a period of just over two months or bilateral lower limb Dopplers over a period of just over four months were assessed and categorised into 'provoked', 'unprovoked' and 'uncertain' using the clinical history provided in the imaging request form. Provoking factors included but were not limited to: surgery within 3 months of investigation, immobility, recent hospital admission, recent long haul flight and known malignancy. Using clinical notes, laboratory results and the institution's picture archiving and communicating system (PACS), the patients labelled 'unprovoked' or 'uncertain' were analysed to determine whether the following investigations had been performed: physical examination at time of admission, full blood count (FBC), liver function tests (LFT), serum calcium, urinalysis and a chest radiograph (CXR) in those with lower limb VTE within one month of the initial investigation for a VTE. In addition, any imaging of the abdomen/pelvis (and mammograms in women) within 6 months of the initial investigation for a VTE was analysed by the primary investigator and a consultant radiologist. The frequency of occult malignancies was subsequently identified.

SSG07-05 Performance Characteristics of a Multi-Institutional Phase II Hodgkin Lymphoma Adaptive Trial Utilizing Early Interim FDG-PET

Tuesday, Dec. 1 11:10AM - 11:20AM Location: S102D

Participants

Jun Zhang, PhD, Columbus, OH (*Presenter*) Nothing to Disclose
Heiko Schoder, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Nathan C. Hall, MD, PhD, Columbus, OH (*Abstract Co-Author*) Nothing to Disclose
Lawrence H. Schwartz, MD, New York, NY (*Abstract Co-Author*) Committee member, Celgene Corporation; Committee member, Novartis AG; Committee member, ICON plc; Committee member, BioClinica, Inc
Olliver W. Press, MD, PhD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
Michael V. Knopp, MD, PhD, Columbus, OH (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To evaluate the overall trial implementation and performance characteristics of a NCI National Clinical Trial Network sponsored South West Oncology Group (SWOG) phase II multi-institutional Hodgkin's lymphoma trial using a response-adapted therapy approach based on interim FDG-PET imaging.

METHOD AND MATERIALS

A comprehensive standardized workflow for this multi-institutional adaptive FDG-PET/CT clinical trial was established by the imaging team of the network group and associated imaging corelab (ICL). A detailed quality control system in fully SOP driven was developed for data quality assessment and imaging compliance monitoring using 15 criteria. Patient accrual, data compliance, site credentialing, real-time central review as well as endpoint data analysis were evaluated. AG Mednet was utilized for all electronic data transmission from the participating sites to the ICL, and an Intellispace Portal (Philips Healthcare) workstation environment was used to support the virtualized remote reader panel.

RESULTS

372 patients with 1093 PET/CT studies from 126 credentialed institutions were accrued between 2009 and 2014. 93% of all studies were determined as compliant, 5% acceptable and 2% noncompliant. For patients based analysis, 89% were compliant and 11% acceptable with 0% noncompliant. Challenges of site credentialing, major protocol violations and overall turn-around time of data submission, quality check confirmation and real-time central reviews were analyzed in detail. A success rate of collecting evaluable imaging exams of better than 91% has been achieved while evaluating over 1000 real-time central reviews of which 75% were accomplished within 24-48hr turn-around time from data receipt to results notification. A broad based (n=8), trained and assisted central review reader panel successfully used the remote access, thin client based approach for all the imaging reviews

CONCLUSION

The performance of a large scale, multi-institutional, phase II response adaptive clinical trial utilizing early interim FDG-PET was successfully demonstrated and establishes best practices as well as its feasibility. This should encourage to increase the appropriate use of imaging methodologies to guide response adaptive clinical trials.

CLINICAL RELEVANCE/APPLICATION

A multi-institutional, response adaptive clinical trial using centralized PET image assessment was successfully demonstrated and has established standards for workflows and quality control.

SSG07-06 Legal Issues of Vertebroplasty and the Standard of Care: A Survey of Musculoskeletal Radiologists

Tuesday, Dec. 1 11:20AM - 11:30AM Location: S102D

Participants

Jonathan Mezrich, MD, New Haven, CT (*Presenter*) Nothing to Disclose
Charles S. Resnik, MD, Baltimore, MD (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Percutaneous vertebroplasty is a procedure intended to address severe pain caused by vertebral compression fractures refractory to conventional pain regimens. In 2010, the American Academy of Orthopedic Surgeons (AAOS), relying on two controversial 2009 studies, issued a guideline recommending against vertebroplasty for neurologically intact patients presenting with symptomatic osteoporotic spinal compression fractures. Clinical guidelines in radiology, however, do not oppose vertebroplasty for appropriately selected patients. A survey was circulated to determine the extent musculoskeletal radiologists perform vertebroplasty, their experiences, and whether there is an apparent standard of care in the subspecialty.

METHOD AND MATERIALS

An online survey of the approximately 1140 members of the Society of Skeletal Radiology (SSR) was conducted through SurveyMonkey.com. There were 253 responses, representing a 22.2 % response rate.

RESULTS

40 respondents (16%) indicated they perform vertebroplasty. Of those who perform vertebroplasty, 23% indicated that they question the methodology of the AAOS guideline, 48% base their actions on their own experience/data, and 13% only offer the procedure as a last resort treatment. Respondents indicated that the majority of their patients did not require multiple level vertebroplasty, did not develop fractures at adjacent levels, or require their original pain medication regimen, post-procedure.

CONCLUSION

Based on the survey results, a small minority of members of SSR perform vertebroplasty, with the majority of patients doing well with the procedure. A standard of care is the degree of care a reasonably prudent clinician in the community should exercise under similar circumstances. If a minority of clinicians in a subspecialty perform a procedure, does that reflect on the standard of care? To what extent does the AAOS guideline impact the standard of care for radiologists? Might this guideline be admitted in litigation? Might an orthopedic surgeon be called as an expert witness in a case involving a radiologist? Although not prohibited under radiology guidelines, radiologists need to consider whether the controversy creates an unfavorable legal footing.

CLINICAL RELEVANCE/APPLICATION

This study is relevant to all radiologists who perform vertebroplasty or care for patients with vertebral compression fractures.

SSG07-07 Rounding Radiologists: Does Clinical Collaboration Strengthen the Relationship between Radiology Residents and Internal Medicine Teams?

Tuesday, Dec. 1 11:30AM - 11:40AM Location: S102D

Participants

Allison Aripoli, MD, Kansas City, KS (*Presenter*) Nothing to Disclose
Rustain L. Morgan, MD, MS, Kansas City, KS (*Abstract Co-Author*) Nothing to Disclose
Jacqueline Hill, MPH, Kansas City, KS (*Abstract Co-Author*) Nothing to Disclose
Arnie Robinson, BS, RT, Kansas City, KS (*Abstract Co-Author*) Nothing to Disclose
Shelby J. Fishback, MD, Kansas City, MO (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To determine if incorporating radiology residents into clinical rounds as consultants strengthens the relationship between referring clinicians and radiologists.

METHOD AND MATERIALS

In this prospective pilot study, senior radiology residents attended daily sit-down rounds with oncology, hematology, and pulmonary inpatient teams for four-week rotations during the 2014-2015 academic year. Radiology residents reviewed and discussed imaging studies and were available by dedicated mobile phone throughout the day for questions. Pre- and post-pilot surveys were distributed to clinicians and consulting radiology residents. Survey results were analyzed to measure the pilot's effect on clinician/radiologist relationships and overall patient care.

RESULTS

Analysis of 60 pre- and 47 post-pilot surveys revealed that referring clinicians find having dedicated time to review imaging during rounds is beneficial and useful for clinical knowledge. While only 38% of clinicians originally believed patients would benefit from incorporating a radiologist into rounds, this increased to 62% post-pilot ($p=0.02$). Further, 8 of 10 scaled responses measuring aspects of clinician/radiologist relationships increased, including clinician trust in radiology resident interpretation expertise ($p=0.03$) and clinicians' inclination to work directly with radiologists more often ($p=0.004$). Radiology residents ($n=4$) also reported a benefit, with 75% strongly agreeing that clinical team interaction improves exam interpretation (vs. 20% pre-pilot).

CONCLUSION

Clinicians, radiologists, and patients benefit from incorporating radiologists into daily clinical rounds, as evidenced by improved clinical relationships and perceived benefit to patient care. Our results suggest implementation of daily consultation between specialists is possible and can result in measurable patient care advantages.

CLINICAL RELEVANCE/APPLICATION

Developing methods to increase collaboration between radiologists and referring clinicians is crucial to improving diagnostic and patient management decisions in the digital technology era.

SSG07-08 Emergency Radiology Evaluation: A Systematic Literature Review of Emergency Radiology Studies Assessing Efficiency, Workflow, Time, Throughput, Cost, and/or Productivity

Tuesday, Dec. 1 11:40AM - 11:50AM Location: S102D

Participants

Brian W. Bresnahan, PhD, Seattle, WA (*Presenter*) Stockholder, Johnson & Johnson;
Daniel S. Hippe, MS, Seattle, WA (*Abstract Co-Author*) Research Grant, Koninklijke Philips NV; Research Grant, General Electric Company
Claire K. Sandstrom, MD, Seattle, WA (*Abstract Co-Author*) Speaker, Siemens AG
Michael McNeeley, MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
Bruce E. Lehnert, MD, Seattle, WA (*Abstract Co-Author*) Research support, Koninklijke Philips NV
Daniel Willems, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
Steven H. Mitchell, MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
Ken F. Linnau, MD, MS, Seattle, WA (*Abstract Co-Author*) Speaker, Siemens AG; Royalties, Cambridge University Press;

PURPOSE

To describe and characterize the emergency radiology published literature for studies reporting on efficiency, workflow, time, throughput, cost, and/or productivity.

METHOD AND MATERIALS

We conducted a systematic literature review via PubMed (prior to January 1, 2015), using search terms related to emergency

department (ED), radiology, and efficiency-related topics. We used pre-specified criteria to screen abstracts and identify manuscripts for full text review. Manuscripts selected for analysis were assessed for study time period, countries, age of participants, modalities, comparators (if any), study design, and outcomes. We characterized studies and assessed trends in the frequency of manuscripts over time using a chi-squared test.

RESULTS

Our initial search identified 208 abstracts for screening with 124 meeting full text review criteria and 80 included in final analysis. The United States was included in 73% of studies, European countries (19%), with few studies in other countries (Table 1). Most studies were in adults (78%). Multiple imaging modalities were assessed, with CT-related questions being predominant (75%). The vast majority of articles (93%) were research related rather than specifying quality improvement or education. However, 54% of publications did not include a comparator intervention. Cohort and database studies were most prevalent, whereas there were few randomized trials. Fewer than 15% included either modeling or cost assessments. Outcome measures included time estimates of varying types, including time to imaging, time to diagnosis or decision, and time of ED length of stay. Time to event and ED length of stay were included in more than 50% of reported studies. We found an increased frequency of more recent studies when assessing trends in five-year, time-period groupings ($p < 0.001$).

CONCLUSION

A systematic literature review identified limited publications assessing emergency radiology efficiency-related metrics. More high-quality studies, including randomized controlled trials and modeling evaluations are needed to better assess ED radiology throughput, workflow, productivity, and financial implications.

CLINICAL RELEVANCE/APPLICATION

Emergency Department throughput is a mandated reporting metric, however, the evidence base is limited for comparative, high-quality research studies assessing efficiency-related radiology processes.

SSG07-09 Health Service, Policy and Research Keynote Speaker: Preventing Errors in Radiology: Implementing Safety Culture and Systems Thinking

Tuesday, Dec. 1 11:50AM - 12:00PM Location: S102D

Participants

Kimberly E. Applegate, MD, MS, Zionsville, IN (*Presenter*) Nothing to Disclose

Health Service, Policy and Research Tuesday Poster Discussions

Tuesday, Dec. 1 12:15PM - 12:45PM Location: HP Community, Learning Center



AMA PRA Category 1 Credit™: .50

Participants

Edward Y. Lee, MD, MPH, Boston, MA (*Moderator*) Nothing to Disclose
Jonathan James, BMBS, Nottingham, United Kingdom (*Moderator*) Nothing to Disclose

Sub-Events**HP216-SD- The Effects of Erroneously Placed Imaging Orders TUA1**

Station #1

Participants

Saad Hussain, MD, New Haven, CT (*Presenter*) Nothing to Disclose
Vivek Patel, MD, New Haven, CT (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Clinical imaging has not only grown in demand, it has become increasingly complex. While new modalities, techniques, and protocols have reduced patient harm and improved diagnostic accuracy, they have complicated the image ordering process for clinicians. Our goal is to assess the effects of improperly placed imaging orders, and to understand how radiologists can engage in direct consultation with colleagues to facilitate efficient, appropriate, and reliable clinical imaging in the inpatient setting.

METHOD AND MATERIALS

A 16 question survey was sent to residents, fellows, and attending radiologists at our multicenter academic institution. Responses were anonymous.

RESULTS

79 respondents read an average of 41.1 studies/day and encountered 4.7 imaging order errors/day. The most common errors are: improper addition/omission of contrast (54%), incorrect imaging modality (17%), and incorrect anatomic focus (12%). Other common errors included incorrect laterality, and incorrect time frame/acuity of the study (17%). Correcting erroneous orders takes approximately 26 minutes/day. Improperly placed orders result in delayed patient care, unnecessary radiation, unnecessary expense, non-diagnostic studies, and unnecessary contrast agent exposure. According to respondents, 75% of errors are found on patient arrival and 14% are encountered after the patient has been imaged. 15% of respondents were confidently aware of the federal/state laws regarding imaging order modification by radiologists and 17% were aware of the hospital's policies.

CONCLUSION

Incorrectly placed imaging orders are encountered frequently. They result in delayed patient care, unnecessary expenditure as well as improper exposure to radiation and contrast agents. Correcting these errors also reduces productivity. While most radiologists see themselves as clinical consultants, we are hesitant to modify improper imaging orders due to various perceived consequences including conflict with ordering clinicians and insurance complications.

CLINICAL RELEVANCE/APPLICATION

Radiologists in an inpatient setting should take a more proactive role in offering their consulting services to physicians before orders are placed to reduce errors and facilitate proper imaging. This may require an initial time investment, but a significant amount of time is already being spent on erroneous orders during protocolling or even after the patient has already received the wrong imaging study.

HP217-SD- Annual Total Body MRI for Screening in High Risk and Li-Fraumeni Syndrome Patients TUA2

Station #2

Participants

Colette van Buchem, Amsterdam, Netherlands (*Abstract Co-Author*) Nothing to Disclose
Gabe S. Sonke, MD, PhD, Amsterdam, Netherlands (*Abstract Co-Author*) Nothing to Disclose
Evelien Bleiker, PhD, Amsterdam, Netherlands (*Abstract Co-Author*) Nothing to Disclose
Marielle W. Ruijs, PhD, Amsterdam, Netherlands (*Abstract Co-Author*) Nothing to Disclose
Leon C. ter Beek, PhD, Amsterdam, Netherlands (*Abstract Co-Author*) Nothing to Disclose
Claudette E. Loo, MD, Amsterdam, Netherlands (*Presenter*) Nothing to Disclose

PURPOSE

Patients with Li-Fraumeni Syndrome have a substantially higher lifetime risk of developing cancer. A yearly screening program, including total body MRI, potentially benefits these patients. Our institute has a large cohort of Li-Fraumeni Syndrome patients who participate in such a screening program since 2011. The aim of our study was to assess the incidence of potentially important new findings on total body MRI and the number and results of additional imaging procedures performed.

METHOD AND MATERIALS

All total body MRIs performed for screening purposes made between October 2011 and November 2014 were evaluated. The total body MRI scan protocol of 12 minutes consisted of non-contrast T1-weighted and STIR series in the coronal plane and a whole body diffusion DWIBS series scanned in the coronal plane and reconstructed in the coronal plane.

RESULTS

In total, 58 patients (136 total body MRIs) were included in the screening program (45 Li-Fraumeni syndrome, 13 high risk). Twenty-five patients (43%) had a prior history of malignancy. During the initial screening round, new abnormal findings were detected in 23/58 (40%) patients, giving rise to initial additional imaging in 22 (40%) patients and subsequent imaging in 8. A new malignancy was detected in 3 (5%) patients. A second screening round was performed in 47 patients, with new findings in 4 (9%) and additional imaging in 2 (4%) patients. No further malignancy was found. Numbers for third and fourth year screening rounds are shown in the table. Additional diagnostic procedures consisted of detailed MRI (48%), ultrasound (48%) and conventional X-rays (5%). During the study period, one malignancy was missed.

CONCLUSION

Total body MRI resulted in additional imaging in almost half of the high risk patients, with the majority of imaging performed in the first screening year. New and asymptomatic malignancies were detected in five percent of patients. Further research is needed to determine the optimal screening interval and to show whether early detection improves survival and weighs up to the number of false positive findings.

CLINICAL RELEVANCE/APPLICATION

Annual screening with total body MRI is helpful in detecting asymptomatic malignancies in a high risk and Li-Fraumeni syndrome population.

CLINICAL RELEVANCE/APPLICATION

Annual screening with total body MRI helps to detect asymptomatic malignancies in a high risk population.

HP218-SD- Acute Kidney Injury in Diabetic Patients Treated with Metformin who Undergo a Contrast-enhanced TUA3 CT: Our Experience

Station #3

Participants

Nerea Yanguas Barea, MD, Tudela, Spain (*Presenter*) Nothing to Disclose
Luis Sarria, MD, Zaragoza, Spain (*Abstract Co-Author*) Nothing to Disclose
Miguel Angel De Gregorio, PhD, Zaragoza, Spain (*Abstract Co-Author*) Nothing to Disclose
David Ibanez, MD, Zaragoza, Spain (*Abstract Co-Author*) Nothing to Disclose
Javier Salceda Artola, MD, Tudela, Spain (*Abstract Co-Author*) Nothing to Disclose
Rosa M. Cozcolluela, Tudela, Spain (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To determine the incidence of acute kidney injury induced by intravenous contrast media in a diabetic population in treatment with metformin that undergo a contrast-enhanced CT, and to compare it with non-diabetic population To determine if there is a limit in renal function to administer contrast media in these patients

METHOD AND MATERIALS

We recruited more than 700 consecutive patients receiving metformin as their usual treatment for Diabetes Mellitus type 2 that underwent a contrast-enhanced CT from January 2010 to December 2014 at our institution. All of these patients were included in a specific protocol designed by our hospital, called "Metformin and iodinated contrast". We determined their renal function using serum creatinine level and estimated glomerular filtration (using MDRD formula) before administering the contrast media. At the moment of the contrast media administration we asked the patients to stop their metformin treatment, as well as we gave them an information letter. We also determined their renal function at 48-72 hours after the CT scan has been performed and asked them to go to their family physician to evaluate if they could reintroduce the treatment or they needed to change it. We also collected data about personal medical history and risk factors for renal impairment, previous pharmacological treatments (especially nephrotoxic drugs), clinical status and comorbidities, and all data about radiologic procedure including contrast media volume and concentration and injection rate. These data were obtained from the clinical history of our hospital

RESULTS

The incidence of acute kidney injury in type 2 diabetic patients with normal renal function previous to contrast media administration is similar to non diabetic population. In advance renal failure (at least stage 3) , there is an increased risk of acute kidney injury. These are preliminary results

CONCLUSION

In those patients with previous advanced renal failure we should consider to stop metformin treatment when they are going to receive contrast media. In patients with normal function it would probably not be necessary to discontinue their usual treatment.

CLINICAL RELEVANCE/APPLICATION

Estimated glomerular filtration is a good marker of renal function to classify the risk of acute kidney injury in diabetic patients taking metformin who undergo a contrast-enhanced CT

HP219-SD- Cardiac Imaging Exams: Patient Awareness of Associated Utilization of Radiation TUA4

Station #4

Participants

Jacqueline Hollada, BA, Baltimore, MD (*Abstract Co-Author*) Nothing to Disclose
Leila Mostafavi, MD, Los Angeles, CA (*Presenter*) Nothing to Disclose
William Speier IV, PhD, Los Angeles, CA (*Abstract Co-Author*) Nothing to Disclose
Saeed Javidi, Westwood, CA (*Abstract Co-Author*) Nothing to Disclose
Stefan G. Ruehm, MD, Los Angeles, CA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

While medical imaging continues to progress in its ability to localize abnormalities within the body, society remains suspicious of diagnostic modalities, specifically with regard to the use of radiation. Often, this suspicion is due to a lack of general understanding regarding which imaging procedures involve radiation and which do not. The purpose of this study was to determine baseline knowledge surrounding the use of radiation in various types of cardiac imaging modalities amongst patients referred for diagnostic imaging.

METHOD AND MATERIALS

Over a six-month period, a total of 210 patients between the ages of 18 and 92 years, presenting for various types of cardiac imaging examinations, completed a survey about radiation exposure, either on the day of the exam or by mail following the imaging study. All patients were asked to indicate which of the following imaging modalities utilized radiation: computed tomography (CT), nuclear medicine (NM), magnetic resonance (MR) imaging, catheter angiography, ultrasound, and X-ray.

RESULTS

A total of 192 cardiac imaging patients responded. Overall, 43% of patients believe that MR involves the use of radiation. Of all the imaging modalities listed, most patients (84%) correctly identified X-ray imaging as a technique that involved the use of radiation. CT patients were more likely to know that CT utilized radiation (85%) as compared to those receiving other imaging procedures (43.5%, $p < 0.0001$). Patients undergoing cardiac MR imaging, however, were no more likely to know that MR did not involve the use of radiation, 35.8% vs. 45.7%, ($p = 0.11$), with no significant difference between college-educated and non-college-educated patients.

CONCLUSION

Overall, there appears to be a general lack of awareness regarding which imaging modalities involve the use of radiation. Especially with regard to MR, these findings are of concern to physicians as patients may be reluctant to move forward with a prescribed exam due to general misperceptions. Given the prevailing negative perception of radiation usage in medical imaging, conscious efforts should be made by physicians to hold discussions with their patients regarding their viewpoints of imaging procedures.

CLINICAL RELEVANCE/APPLICATION

As patients may not be forthright with their opinions or views, patient-physician discussion of perceptions of medical imaging may be beneficial with regard to informed consent and patient anxiety.

HP220-SD- Indications of Emergency Department Radiographs: Analysis of Quality and Trends at a Large TUA5 Academic Medical Center

Station #5

Participants

Kevin R. Kalisz, MD, Cleveland, OH (*Presenter*) Nothing to Disclose
Vasant Garg, MD, Cleveland Heights, OH (*Abstract Co-Author*) Nothing to Disclose
Kyle Basques, MD, Cleveland, OH (*Abstract Co-Author*) Nothing to Disclose
Peter C. Young, MD, Cleveland, OH (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To assess the quality of and analyze trends among clinical indications received for emergency room radiograph studies.

METHOD AND MATERIALS

Clinical indications provided by the emergency room (ER) and rapid care (RC) for consecutive chest, abdominal, and musculoskeletal (MSK) radiographs were collected over a single week. An in-depth chart review was performed to analyze the provided indications compared to clinical information known to the ordering providers. Chest and abdominal radiograph (C/A) indications were graded according to: symptoms/physical exam signs and relevant past medical history. MSK indications were graded according to: symptoms, mechanism of injury, and positive physical exam findings. When referenced to documented clinical notes, each study indication was graded on a scale from 0 to 2 according to scales modified from those of prior published studies. Grades were further stratified according to ordering location (ER or RC), time of shift, ordering provider level (attending, resident, or physician extender), and specific anatomy involved (chest versus abdomen; spine versus extremity).

RESULTS

A total of 218 C/A and 212 MSK radiographs were included in this study. For C/A studies, the mean \pm standard error for symptom/physical exam and provided past medical history grades were 1.16 ± 0.04 and 0.36 ± 0.05 , respectively ($p < 0.001$). There was a trend towards a significant difference ($p = 0.06$) in mean medical history grades among ordering provider levels. For MSK studies, the mean \pm standard error for symptom, mechanism, and physical exam grades were 1.04 ± 0.05 , 0.89 ± 0.05 , and 0.51 ± 0.05 , respectively. Mean symptom and exam grades for physician extenders were significantly less ($p < 0.01$) than those of attendings and residents. Mean symptom and mechanism grades for extremity studies were significantly less ($p < 0.05$) than those for spinal studies.

CONCLUSION

For plain radiographs ordered through the emergency department, certain critical pieces of a study indication (i.e. C/A medical histories, positive MSK exam findings) tended to be underreported relative to other components. Furthermore, significant differences in select categories were seen among ordering provider levels and anatomic location.

CLINICAL RELEVANCE/APPLICATION

Understanding the scope of the problem of incompletely provided clinical histories in more detail will allow for more targeted interventions in order to more efficiently implement change.

HP101-ED- The Relative Value Unit: History, Current Use, and Controversies TUA6

Station #6

Participants

Yuri E. Peterkin, MD, Mineola, NY (*Presenter*) Nothing to Disclose
Amanjit S. Baadh, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
April Griffith, Mineola, NY (*Abstract Co-Author*) Nothing to Disclose
Ahmed Fadl, MD, Mineola, NY (*Abstract Co-Author*) Nothing to Disclose
Douglas S. Katz, MD, Mineola, NY (*Abstract Co-Author*) Nothing to Disclose
Jason C. Hoffmann, MD, Mineola, NY (*Abstract Co-Author*) Consultant, Merit Medical Systems, Inc; Speakers Bureau, Merit Medical Systems, Inc
Siavash Behbahani, MD, Mineola, NY (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

1. The Relative Value Unit (RVU) is an important measuring tool for the work performed by physicians.2. The RVU system is currently used in the United States to calculate physician reimbursement.3. An understanding of current controversies regarding radiology RVUs and Current Procedural Terminology (CPT) codes is important for the radiologist and the trainee, as this knowledge will help them to better understand their current productivity and payment, as well as adapt to reimbursement changes that may occur in the future.

TABLE OF CONTENTS/OUTLINE

Provide a background about Medicare, Resource-Based Relative Value Scale (RBRVS), Relative Value Units (RVUs), and Current Procedural Terminology (CPT) codesDescribe who determines RVUsReview the components of the RVU and how radiology payment is calculatedHighlight trends in RVUs and resultant payment for a variety of diagnostic and interventional radiology studies over the past 3 yearsDiscuss current issues involving RVU and CPT codes in radiology-Multiple Procedure Payment Reduction-Code bundling-Affordable Care Act and radiology reimbursement-Reimbursement issues with contiguous body part imaging-Denial by CMS for coverage of screening examinations, thus leading to difficulty in getting CPT codes for screening examinations such as CT colonography and lung cancer screeningConclusions

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Douglas S. Katz, MD - 2013 Honored Educator
Douglas S. Katz, MD - 2015 Honored Educator

Health Service, Policy and Research Tuesday Poster Discussions

Tuesday, Dec. 1 12:45PM - 1:15PM Location: HP Community, Learning Center



AMA PRA Category 1 Credit™: .50

Participants

Edward Y. Lee, MD, MPH, Boston, MA (*Moderator*) Nothing to Disclose
Jonathan James, BMBS, Nottingham, United Kingdom (*Moderator*) Nothing to Disclose

Sub-Events**HP224-SD- Closing the Gender Gap: Increased Female Authorship in AJR and Radiology TUB4**

Station #4

Participants

Kyungjun Min, Seoul, Korea, Republic Of (*Presenter*) Nothing to Disclose
Dae Young Yoon, MD, Kangdong-Gu, Korea, Republic Of (*Abstract Co-Author*) Nothing to Disclose
Eun Joo Yun, Seoul, Korea, Republic Of (*Abstract Co-Author*) Nothing to Disclose
Bitna Kim, Seoul, Korea, Republic Of (*Abstract Co-Author*) Nothing to Disclose
Ji Yoon Moon, MD, Seoul, Korea, Republic Of (*Abstract Co-Author*) Nothing to Disclose
Soo Jeong Yoon, MD, Seoul, Korea, Republic Of (*Abstract Co-Author*) Nothing to Disclose
Su Jin Hong, MD, Seoul, Korea, Republic Of (*Abstract Co-Author*) Nothing to Disclose
Sora Baek, Seoul, Korea, Republic Of (*Abstract Co-Author*) Nothing to Disclose
Jinho Kim, Seoul, Korea, Republic Of (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

The purpose of this study was to evaluate gender differences in the authorship of original research articles by radiologists in two major American radiology journals, AJR American Journal of Roentgenology (AJR) and Radiology.

METHOD AND MATERIALS

Our study was a retrospective bibliometric analysis that did not involve human subjects and was exempt from the need for Institutional Review Board approval. All original articles published in the AJR and Radiology during three 3-year periods (1991-1993, 2001-2003, and 2011-2013) were reviewed to determine the gender of the first and corresponding radiology authors. In addition, radiological subspecialty and country of the authors were also abstracted from each article.

RESULTS

The gender of the first and corresponding authors could be determined for 10,043 (98.5%) of the 10,228 radiology authors of original research. Between 1991-1993 and 2011-2013, the percentage of female authors significantly increased from 20.4% to 34.4% among first authors ($P < .0001$) and from 18.0% to 28.7% among corresponding authors ($P < .0001$). There was a significant correlation between the gender of the first and corresponding authors ($P < .05$). In the 2011-2013 period, the proportion of female authors was the highest in 'breast' (64.2%) and 'pediatric' (48.2%) and the lowest in 'vascular/interventional' (18.5%) and 'cardiac' (21.0%) subspecialties. The proportion of female authors was the highest in the Netherlands (47.3%), South Korea (37.9%), Italy (37.0%), and France (36.2%).

CONCLUSION

There was a significant increase in the female authorship of original research articles in two major American radiology journals from 1991-1993 to 2011-2013.

CLINICAL RELEVANCE/APPLICATION

The purpose of this study was to evaluate gender differences in the authorship of original research articles by radiologists in two major American radiology journals, AJR American Journal of Roentgenology (AJR) and Radiology.

HP131-ED- Standardized Tumor Response Assessment Criteria in Oncology- Are You Up for a Challenge? TUB6

Station #6

Participants

Bhanusupriya Somarouthu, MD, Boston, MA (*Presenter*) Nothing to Disclose
Susanna I. Lee, MD, PhD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Cheryl A. Sadow, MD, Weymouth, MA (*Abstract Co-Author*) Nothing to Disclose
Gordon J. Harris, PhD, Boston, MA (*Abstract Co-Author*) Medical Advisory Board, Fovia, Inc
Avinash R. Kambadakone, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose

TEACHING POINTS

The purpose of this exhibit is to 1. To review the various criteria available for tumor response assessment to various therapies. 2. To discuss the challenges and pitfalls encountered while applying the established tumor assessment criteria for imaging reviews in clinical trials. 3. To discuss with case based examples on the most appropriate method for tumor response assessment

TABLE OF CONTENTS/OUTLINE

1. Discuss various response assessment criteria including Cheson, RECIST, irRC, irRECIST, mRECIST, PCWG2. 2. Rationale for appropriate technique and rules for assessment while using the standardized response assessment criteria. 3. Interactive questionnaire / quiz presenting the pitfalls and challenges faced during imaging review and tips for accurate assessment.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Susanna I. Lee, MD, PhD - 2013 Honored Educator

SSJ12

ISP: Health Service, Policy and Research (Quality)

Tuesday, Dec. 1 3:00PM - 4:00PM Location: S102D



AMA PRA Category 1 Credit™: 1.00
ARRT Category A+ Credit: 1.00

FDA Discussions may include off-label uses.

Participants

Jonathan James, BMBS, Nottingham, United Kingdom (*Moderator*) Nothing to Disclose
Edward Y. Lee, MD, MPH, Boston, MA (*Moderator*) Nothing to Disclose

Sub-Events

SSJ12-01 Health Service, Policy and Research Keynote Speaker: Assessing Individual Performance in Radiology

Tuesday, Dec. 1 3:00PM - 3:10PM Location: S102D

Participants

Jonathan James, BMBS, Nottingham, United Kingdom (*Presenter*) Nothing to Disclose

SSJ12-02 Framing Bias Effects on Retrospective Reviews of Radiological Reports

Tuesday, Dec. 1 3:10PM - 3:20PM Location: S102D

Participants

Jeffrey D. Robinson, MD, MBA, Seattle, WA (*Presenter*) Consultant, HealthHelp, LLC; President, Clear Review, Inc;
Daniel S. Hippe, MS, Seattle, WA (*Abstract Co-Author*) Research Grant, Koninklijke Philips NV; Research Grant, General Electric Company

PURPOSE

When reviewing difficult exams, radiologists often disagree on the severity of a potential error. In the legal setting, this is often attributed to retrospective or framing bias. This study examines the effect of framing bias on radiologists' perceptions when evaluating potential errors.

METHOD AND MATERIALS

This study was IRB approved. Eleven de-identified exams that had been subject of malpractice litigation and four uncontested control exams were divided into four review sets each containing three litigation (L) exams and one control (C) and their accompanying reports. Volunteers solicited from the ACR directory were randomly assigned to one of four groups (P,D,Q,N). Group P was told that they had been retained by a malpractice plaintiff's attorney; D that they had been retained by a defense attorney; Q that a neighboring hospital requested an outside QA review and N was given no context. Subjects were also randomly assigned to one of the four review sets, and asked for each exam if the radiology report failed to meet the standard of care (failure). The rates at which each group judged each type of exam to be a failure were compared using a multivariate, mixed-effect, logistic regression model.

RESULTS

The study was completed by 102 radiologists, yielding 368 reviews (276 L, 92 C). Together, all four groups rated L exams as failures in 57% of assessments, and C exams in 27% ($p=0.006$). The difference in ratings between L and C exams was most pronounced in Group P (62% vs. 26%, $p=0.013$) and Group N (66% vs. 18%, $p=0.003$). Within the subgroup of L exams, Group P was significantly more likely to judge an exam a failure than the Group D (62% vs 48%, $p=0.032$). The Q and N groups were not significantly different than the other groups.

CONCLUSION

Framing bias plays a significant role in retrospective review. Told that the exams they were reviewing were problematic, reviewers rated 27% of control exams below the standard of care. Simulated plaintiff's experts rated litigation exams below the standard of care significantly more frequently than simulated defense experts rated the same exams. These differences in performance highlight the effect such bias plays in actual expert witness review.

CLINICAL RELEVANCE/APPLICATION

Since framing bias can significantly affect reviewers' impressions, blinding a reviewer to the nature of the exam being reviewed should increase the objectivity of the reviewer's judgment.

SSJ12-03 Performance Testing for Radiologists Interpreting Chest Radiographs

Tuesday, Dec. 1 3:20PM - 3:30PM Location: S102D

Participants

Yan Chen, Loughborough, United Kingdom (*Presenter*) Nothing to Disclose
Jonathan James, BMBS, Nottingham, United Kingdom (*Abstract Co-Author*) Nothing to Disclose
Leng Dong, Loughborough, United Kingdom (*Abstract Co-Author*) Nothing to Disclose
Alastair G. Gale, PhD, Loughborough, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

The aim was to develop a system to assess the image interpretation performance of radiologists in identifying signs of malignancy

on chest radiographs.

METHOD AND MATERIALS

A test set of 30 digital chest radiographs was chosen by an experienced radiologist consisting of 11 normal and 19 challenging abnormal cases. The abnormal cases all had biopsy proven pathology; the normal cases had at least 2 years of imaging follow up. 14 radiologists with a range of experiences were recruited. Participants individually read the test set displayed on a standard reporting workstation, with their findings entered directly onto a laptop running specially designed reporting software. For each case they were given the relevant clinical information and were asked to mark any perceived abnormality and rate their level of suspicion on a 5-points scale (normal, benign, indeterminate, suspicious or malignant). On completion of the test, participants were given instant feedback and had the opportunity to review cases where there was disagreement with the expert opinion and pathology. The time taken for the participants to complete the test was recorded. Differences between the participants' performance were assessed using ROC analysis.

RESULTS

The experience of the participants in reporting chest radiographs ranged from 1 to 26 years (Mean=9 yrs, Mdn=5 yrs). Participants' performance (ROC score) varied significantly between 2 groups (6 post-fellowship consultants, and 8 radiology residents). Radiology residents' performance as measured by ROC score was significantly poorer compared to post-fellowship consultants (Mean-RS=0.76, Mean-PFC=0.93, $p=.003$). There was a positive correlation between image interpretation performance (ROC Mean=0.85, SD=0.11) and years of reading experience (Mean=9, SD=8.58), $r=.573$, $p<.05$, $n=14$. There was a trend for radiology residents to take longer to complete the task (Mean=26.51s) compared to post-fellowship consultant radiologists (Mean=19.65s), but this did not quite reach statistical significance ($p=.07$).

CONCLUSION

This pilot study demonstrates that it is possible to devise a method for performance testing the reporting of chest radiographs.

CLINICAL RELEVANCE/APPLICATION

Chest radiographs are the first line imaging test for patients with chest symptoms suspicious of malignancy, this pilot study demonstrates that it is possible to devise methods to test performance of the reporting radiologist.

SSJ12-04 Do Socioeconomic Disparities Exist in Radiology? Multivariate Analysis of Socioeconomic Factors Impacting Access to Imaging Services

Tuesday, Dec. 1 3:30PM - 3:40PM Location: S102D

Participants

Omid Khalilzadeh, MD, MPH, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Alvin Y. Yu, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Emmanuel Carrodegua, BS, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Anand M. Prabhakar, MD, Somerville, MA (*Abstract Co-Author*) Nothing to Disclose
Synho Do, PhD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Garry Choy, MD, MS, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
James A. Brink, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Efren J. Flores, MD, Boston, MA (*Presenter*) Nothing to Disclose

PURPOSE

Racial disparities are known to exist in medicine, but little has been studied in radiology. One way to examine this is to look at missed radiology appointments or missed care opportunities (MCO) which result in delayed diagnoses and negatively impact patient care. Moreover, MCO in radiology may be a symptom of missed appointments in other specialties. The reason for missing appointments is multifactorial, and socioeconomic factors may play an important role. In this study, we investigated the demographic factors associated with radiology missed appointments.

METHOD AND MATERIALS

Demographic data of 975,539 ordered radiologic imaging exams at our institution in the calendar year 2014 was collected. The dataset included: ethnicity/race, primary language, insurance status, and reasons for cancellation of the appointment. The association of different factors with radiology MCOs was evaluated. Multivariate logistic regression models were implemented to evaluate the independent relationship between radiology MCOs and various factors.

RESULTS

MCO was the most common reason for not completing a radiologic exam (41.5%). Overall, there was about 5% MCO (42,854) in radiology appointments during the calendar year 2014. A primary language other than English (OR: 1.2), Black ethnicity (OR: 1.8, relative to White) and Hispanic ethnicity (OR: 1.5, relative to White) were significantly associated with higher odds of MCO on a radiology appointment. Among different scan type, the odds of MCO was significantly higher for CT angiograms (OR: 2.8, $P<0.001$). These associations remained significant after multiple adjustments for potential confounding variables.

CONCLUSION

There was a high number (42,854) of radiology MCO in the past year at our institution. Non-English primary language and Hispanic ethnicity significantly correlate with likelihood of missing a radiology appointment. Our results identify patients who are at risk for MCO and provide opportunities for intervention that will improve the patient's experience and address healthcare disparities. Possible interventions to bridge the gap include telephone reminders in the patient's native language, scheduling radiology procedures with radiologists that come from similar background, assistance in coordination of transportation, among others.

CLINICAL RELEVANCE/APPLICATION

Socioeconomic disparities exist in radiology. Further research in this area is paramount to examine the impact to healthcare access.

SSJ12-05 Prevalence of Unanticipated Events Associated with MRI Examinations: A Benchmark for MRI Quality, Safety, and Patient Experience

Awards

Trainee Research Prize - Resident

Participants

Gelareh Sadigh, MD, Atlanta, GA (*Presenter*) Nothing to Disclose
Amit M. Saindane, MD, Atlanta, GA (*Abstract Co-Author*) Nothing to Disclose
Kimberly E. Applegate, MD, MS, Zionsville, IN (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To determine the prevalence of unanticipated events (UE) associated with MRI examinations in a multi-center academic radiology department.

METHOD AND MATERIALS

UE reported by MRI technologists for examinations performed between June 2013 and November 2014 on 17 scanners in a university- (UH) and community-affiliated (CH) hospitals of single health system were retrospectively reviewed. Events were categorized into: (1) orders and scheduling (no/improper order, insurance problem, scheduled wrong study/location, scheduling screening failure, improper preparation instruction/study protocol); (2) delays in scan (late patient arrival/transport, anesthesia/pathology procedure delays, delays in getting correct protocol or checking images); (3) foreign bodies (unanticipated metal/foreign body/pacemaker); (4) non-contrast related (NONCON) patient events (claustrophobia, patient discomfort, body habitus, pregnancy, nausea, pain, motion, need for sedation/general anesthesia, inability to complete the exam, patient dissatisfaction, patient fall, code called for resuscitation); (5) contrast related (CON) patient events (reaction, extravasation, lack of IV access, patient refusal of contrast); (6) technical acquisition issues (fat saturation, breath-holding, contrast bolus timing, mechanical scanner failure). Each category was compared between scanners located in UH vs. CH, and scanners that are solely used for outpatient services (OP) vs. those used for outpatients and inpatients (OP/IP).

RESULTS

34,587 MRI examinations were assessed (87% UH; 59% OP) with 5,760 (17%) UE; (1.9% of patients had more than one category events). Rates of UE for each category were as follows: 1.8% orders and scheduling [0.06% patient arriving wrong day, and 0.03% patient call-back], 3.3% delays in scan, 0.5% foreign bodies, 10.4% NONCON events, 1.3% CON events, and 1.5% technical issues. Most frequent patient issues were motion, claustrophobia, and need for sedation. UH exams had higher reported rate of UE. OP exams had higher rates of orders and scheduling problems and delays in scans, while OP/IP exams had more patient related and technical issues (all $P < 0.05$).

CONCLUSION

UE associated with MRI exams are common (17%), with the majority being patient related issues.

CLINICAL RELEVANCE/APPLICATION

Unanticipated patient events are common. Awareness of the prevalence and types of unanticipated events by MRI staff provides opportunities for practice improvement.

SSJ12-06 Technologist-directed Radiograph Repeats: Frequency and Associations

Participants

Jill E. Jacobs, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Andrew B. Rosenkrantz, MD, New York, NY (*Presenter*) Nothing to Disclose
Joseph J. Sanger, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Marc Parente, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Danny C. Kim, MD, White Plains, NY (*Abstract Co-Author*) Nothing to Disclose
Michael P. Recht, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

The decision to repeat a suboptimal radiograph by the technologist at the time of acquisition, prior to radiologist review, is an infrequently assessed but potentially significant source of excess patient radiation. We assessed the technologist-directed radiograph retake rate in our hospital network.

METHOD AND MATERIALS

We created an analysis tool to track all technologist-directed radiograph rejections for 52 CR and DR imaging device networks in 9 of our hospital-based imaging centers. The tool captured all acquired images and the reject reason in a reject log file (RLF). All RLFs were downloaded monthly to an encrypted USB flash drive, renamed in standardized convention, and uploaded to a protected network share drive. Information Technology staff reviewed all RLFs to ensure completeness and validity. RLFs were then imported into a Reject Analysis Database. Analysis was performed for a 6 month period (6/1/14-11/30/14). Retake rate by case (RRC) was number of retaken exposures (NR) acquired as a percentage of the total number of cases (TC) performed where $RRC = (NR/TC) * 100$. Retake rate by exposure (RRE) was number of retaken exposures (NR) acquired as a percentage of the total number of expected exposures (EE) for all performed examinations where $RRE = (NR/EE) * 100$. Data was stratified by date, site, imaging device, body part, and reject reason.

RESULTS

Overall technologist-directed RRC and RRE were 3.4% and 1.8%, respectively. Body part RRC and RRE, respectively were: chest (5.9%, 4.4%); abdomen (3.3%, 1.6%); joint (3.0%, 1.3%); spine (2.6%, 1.2%); skull (1.8%, 1.0%); skeletal survey (1.6%, 0.8%), and unspecified (5.0%, 3.5%). For hospital portable devices, RRC was 9.2% overall (12.5% abdomen; 8.8% chest) and RRE was 9.2% overall (10.8% abdomen and 9.0% chest). The most common reason for repeat exposures was positioning error (2.3% overall) for both portable and non-portable examinations.

CONCLUSION

Rates of technologist-directed radiograph retake vary by body part and are higher for portable examinations.

CLINICAL RELEVANCE/APPLICATION

Technologist education to identify and correct sources of imaging error is necessary to reduce retake rates and decrease excess patient radiation.

RC427

Lung Cancer Screening: Getting Paid to Do Good

Tuesday, Dec. 1 4:30PM - 6:00PM Location: N228



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Pamela Kassing, Reston, VA (*Coordinator*) Nothing to Disclose

Pamela Kassing, Reston, VA (*Moderator*) Nothing to Disclose

Geraldine B. McGinty, MD,MBA, New York, NY (*Presenter*) Nothing to Disclose

Ezequiel Silva III, MD, San Antonio, TX, (zekesilva3@gmail.com) (*Presenter*) Nothing to Disclose

Mark O. Bernardy, MD, Conyers, GA (*Presenter*) Nothing to Disclose

Robert K. Zeman, MD, Washington, DC (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Understand the current process of how reimbursement for new procedures and technology is obtained from CPT code development, valuation and coverage. 2) Using Lung Cancer Screening as an example, the participants will become familiar with the specific processes for obtaining coverage for new screening programs in the public and private sectors and how a myriad of governmental agencies and other policymaking groups are involved in determining which new procedures are covered. 3) Understand how obtaining coverage will bring this new technology to the mainstream. 4) Interactive techniques will be used to engage the audience in the consideration of strategic partnerships between industry, clinical research, governmental agencies and third party payors.

URL

Handout:Pamela Kassing

http://abstract.rsna.org/uploads/2015/14000570/RSNA2015-PPT_slides_MOB_11-23_final.pptx

Handout:Ezequiel Silva

http://abstract.rsna.org/uploads/2015/14000570/Lung_Cancer_Screening_speaker_notes.docx

Dialogue with The Joint Commission: New Diagnostic Imaging Standards for CT and MR

Wednesday, Dec. 2 8:30AM - 10:00AM Location: S404AB

CT MR HPAMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50**Participants**Ehsan Samei, PhD, Durham, NC (*Director*) Nothing to DiscloseEhsan Samei, PhD, Durham, NC (*Moderator*) Nothing to DiscloseEhsan Samei, PhD, Durham, NC (*Presenter*) Nothing to DiscloseAlec J. Megibow, MD, MPH, New York, NY (*Presenter*) Consultant, Bracco GroupRichard C. Semelka, MD, Chapel Hill, NC, (richsem@med.unc.edu) (*Presenter*) Research support, Siemens AG.; Consultant, Guerbet SA.Fergus V. Coakley, MD, Lake Oswego, OR (*Presenter*) Nothing to DiscloseAndrea D. Browne, PhD, Oakbrook Terrace, IL (*Presenter*) Nothing to Disclose**LEARNING OBJECTIVES**

1) Describe areas addressed by the new and revised imaging standards. 2) Understand why The Joint Commission made changes to and/or revised the diagnostic imaging standards. 3) Describe how compliance with the new and revised imaging standards will be evaluated during the on-site survey. 4) Describe ways to demonstrate compliance with the new and revised imaging standards to promote patient safety and patient care.

ABSTRACT

This presentation will provide an overview of the new and revised diagnostic imaging standards. These new standards impact both Ambulatory Care and Hospital diagnostic imaging customers of the Joint Commission. Topics to be covered include: Background on the new and revised diagnostic imaging standards; an overview of the new and revised diagnostic imaging standards; a description of how compliance with the new and revised diagnostic imaging standards will be evaluated during the on-site survey. It will also provide practical insights and suggestions regarding implementation of the new and revised diagnostic imaging standards to promote patient safety and improve patient care in Joint Commission accredited organizations.

RC527

Changing the Way Radiologists Work: How and Why We Need to Embrace a Culture of Safety

Wednesday, Dec. 2 8:30AM - 10:00AM Location: E351

HP SQ

AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Kimberly E. Applegate, MD, MS, Zionsville, IN, (keapple@emory.edu) (*Coordinator*) Nothing to Disclose
Kimberly E. Applegate, MD, MS, Zionsville, IN, (keapple@emory.edu) (*Moderator*) Nothing to Disclose
Giles W. Boland, MD, Boston, MA (*Presenter*) Principal, Radiology Consulting Group; Royalties, Reed Elsevier
Nabile M. Safdar, MD, Alpharetta, GA (*Presenter*) Shareholder, Montage Healthcare Solutions, Inc;

LEARNING OBJECTIVES

1) To describe how technology can accelerate an existing culture of safety in radiology. 2) To assess the risks of poor technology implementations when there is a weak safety culture. 3) To identify the highest impact opportunities for improving safety in one's practice through technology. 4) To assess the maturity of one's informatics infrastructure to support a safety program.

RC532

What Is Driving Health Care Reform and How It Is Changing Your Radiology Practice

Wednesday, Dec. 2 8:30AM - 10:00AM Location: S105AB



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Sub-Events

RC532A Impact of Health Care Reform on Radiology: Intended and Unintended

Participants

Lawrence R. Muroff, MD, Tampa, FL, (LRMuroff@hotmail.com) (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Discuss the key elements of health reform as they impact radiology. 2) Develop strategies to deal with the intended and unintended consequences of health care reform. 3) Describe some of the alternative payment mechanisms that will be competing with fee-for-service, and discuss how radiologists will fit into these new compensation dynamics. (This course is part of the Leadership Track)

ABSTRACT

This presentation will review the trends impacting our specialty. Declining reimbursement, non-traditional competition, and more aggressive turf incursion will be examined, and strategies will be offered to enable radiologists the opportunity to survive and thrive in a time of change. The talk will cover alternative payment proposals and possible new practice models. Future opportunities will be discussed. Attendees of this session should have a better understanding of how our specialty will look in the new health care dynamic and what their role will be in this changed environment.

RC532B How has Health Care Reform Affected Funds Flow and Compensation?

Participants

Ronald L. Arenson, MD, San Francisco, CA (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Recognize the contributory elements promoting the implementation of significant healthcare reform in Massachusetts. 2) Review both the systemic shortfalls and benefits delivered to the citizens of Massachusetts during that state's implementation of universal health care. 3) Understand broad similarities and differences between the Massachusetts and National models of their respective Affordable Care Acts. (This course is part of the Leadership Track)

SSK10

ISP: Health Service, Policy and Research (Education)

Wednesday, Dec. 2 10:30AM - 12:00PM Location: S102D



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Paul P. Cronin, MD, MS, Ann Arbor, MI (*Moderator*) Nothing to Disclose

Laura M. Fayad, MD, Baltimore, MD (*Moderator*) Nothing to Disclose

Sub-Events

SSK10-01 Health Service, Policy and Research Keynote Speaker: Innovative Teaching Methods in Radiology Education

Wednesday, Dec. 2 10:30AM - 10:40AM Location: S102D

Participants

Aine M. Kelly, MD, Ann Arbor, MI (*Presenter*) Nothing to Disclose

SSK10-02 Comparison of High-fidelity Hands-on Simulation Team Training to Lecture/computer-simulation Based Training for Both Contrast Reaction Management and Teamwork Skills

Wednesday, Dec. 2 10:40AM - 10:50AM Location: S102D

Participants

Carolyn L. Wang, MD, Seattle, WA (*Presenter*) Nothing to Disclose

Sankar Chinnugounder, MD, Worcester, MA (*Abstract Co-Author*) Nothing to Disclose

Daniel S. Hippe, MS, Seattle, WA (*Abstract Co-Author*) Research Grant, Koninklijke Philips NV; Research Grant, General Electric Company

Ryan O'Malley, MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose

Puneet Bhargava, MD, Shoreline, WA (*Abstract Co-Author*) Editor, Reed Elsevier

Sadaf F. Zaidi, MD, Spokane, WA (*Abstract Co-Author*) Nothing to Disclose

William H. Bush JR, MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To compare the performance of teams of radiologists, technologists and nurses trained with high-fidelity hands-on simulation versus lecture/computer-based simulation training for contrast reaction management and teamwork skills on a high-fidelity severe contrast reaction scenario.

METHOD AND MATERIALS

Eleven nurses, 11 technologists and 11 PGY2 radiology residents were prospectively recruited for this IRB and HIPAA compliant study. Participants were arranged into teams of 3 (1 resident, 1 nurse and 1 technologist). Six teams underwent hands-on training (HO) and 5 teams underwent lecture/computer-based training (CB) for contrast reaction management (CRM) and teamwork skills (TS). All similarly trained participants were tested in novel teams using a high-fidelity simulation scenario. Three CRM expert radiologists independently graded the CRM skills and three TS experts independently graded the TS skills tested. Objective scores were based on whether key actions were taken or not taken. Subjective scores were based on a 7-point Likert-like scale (strongly disagree to strongly agree). Objective and subjective scores were compared between training groups using the Mann-Whitney test. Spearman's correlation coefficient was used to compare objective and subjective scores.

RESULTS

The HO teams tended to score better than CB teams on the objective CRM (95.3 ± 3.1 vs. 80.8 ± 15.3 $p=0.17$) and subjective CRM scores (6.3 ± 0.5 vs. 5.6 ± 0.8 $p=0.33$). The HO and CB teams score more similarly on both objective TS (51.0 ± 6.1 vs. 52.4 ± 6.8 $p=0.66$) and subjective TS (3.7 ± 0.4 vs. 4.1 ± 0.9 $p=0.25$). There was good correlation between the objective and subjective TS scores ($r=0.78$, $p=0.007$). However, the overall objective score percentages were higher for CRM skills than TS skills for both the HO ($p=0.03$) and CB teams ($p=0.06$).

CONCLUSION

High-fidelity simulation based training may be better than lecture/computer-based training for teams of radiologists, technologists and nurses for contrast reaction management. However, a single session of high-fidelity simulation-based training or computer-based training appears to be similarly inadequate to master teamwork skills.

CLINICAL RELEVANCE/APPLICATION

High-fidelity simulation-based training may be better than computer-based training for teams of radiologists, technologist and nurses for contrast reaction management, but not for teamwork skills.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Puneet Bhargava, MD - 2015 Honored Educator

SSK10-03 Integrating Simulated Clinical Decision Support at the Point-of-Order into Medical Student Radiology Education via a Blended-Learning Environment

Wednesday, Dec. 2 10:50AM - 11:00AM Location: S102D

Participants

Marc H. Willis, DO, Houston, TX (*Presenter*) Nothing to Disclose
L. Alexandre R. Frigini, MD, Houston, TX (*Abstract Co-Author*) Nothing to Disclose
Jay Lin, MD, Bellaire, TX (*Abstract Co-Author*) Nothing to Disclose
David M. Wynne, MD, Pearland, TX (*Abstract Co-Author*) Nothing to Disclose
Karla A. Sepulveda, MD, Houston, TX (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Develop a case-based education portal simulating clinical decision support (CDS) at the point-of-order to highlight best practice in appropriate imaging utilization and patient safety. Pilot the portal with medical students transitioning from preclinical courses to clinical rotations, introducing these students to evidence-based decision making before they are exposed to unexplained variance in clinical ordering habits.

METHOD AND MATERIALS

An education portal was built on the American College of Radiology's Radiology Curriculum Management System (RCMS). RCMS and the CDS tool (ACR Select) were integrated via application programming interface. The cases simulate common clinical scenarios from a primary care practice setting, including questions regarding Choosing Wisely topics. Institutional review board approval was obtained for the pilot project. Learners navigated through the portal, receiving CDS feedback prior to and after selecting answers for the cases. Assessment was via a pre-test, post-test and survey questions.

RESULTS

On the survey, 85.29% of learners believe this portal with simulated CDS should be included in their medical school curriculum. The learners self-assessment of their level of preparation to appropriately order imaging studies for their patients increased. All learners perceived value in the virtual classroom simulated CDS experience. A statistically significant improvement in the number of correct answers from the pre-test to the post-test was achieved in four categories: Intermediate difficulty case scenarios (p-value <0.0001), advanced difficulty case scenarios (p-value 0.0013), Choosing Wisely questions (p-value 0.0207) and the overall total (p-value <0.0001).

CONCLUSION

This novel approach has potential to address many needs in medical education, delivers value, and make a meaningful contribution to medical education. Timing of this project coincides with calls for physicians to embrace decision support. Using a readily available decision support software program, there is an opportunity to develop and implement standard key components of medical education curricula and assessment on the national level.

CLINICAL RELEVANCE/APPLICATION

This web-based product is scalable and could be used for future education projects such as graduate medical education, allied health education, quality improvement projects, and continuing medical education for practicing medical providers.

SSK10-04 iPad Driven Small Group Radiology Sessions within Gross Anatomy Laboratory: Effectiveness at 12 months

Wednesday, Dec. 2 11:00AM - 11:10AM Location: S102D

Participants

Robert J. Ward, MD, Boston, MA (*Presenter*) Nothing to Disclose
Gene M. Weinstein, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Daniel H. MacArthur, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Katherine Malcolm, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Leah Ahn, MS, MA, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Margaret K. Chung, MD, La Jolla, CA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To evaluate the effectiveness of iPad driven radiologic anatomy small group sessions within the first year clinical anatomy laboratory.

METHOD AND MATERIALS

The faculty and residents of the radiology department of Tufts Medical Center participated in 23 of 27 gross anatomy sessions. Groups of 7-12 students of the Class of 2016 rotated through a 4-5 minute small group discussion in front of a 65-inch wall mounted flat screen LCD display hooked up to an Apple TV (Apple, Inc). An iPad 3 (Apple, Inc.) equipped with iOS 5.1 and running OsiriX 3.5 (Pixmeo SARL) was used to project dicom images on the display. Projection as well as cross sectional images specific to the laboratory curriculum were utilized. Images shown during the laboratory sessions were later used on the 4 lab practical examinations. A 20 question multiple choice examination was administered to the class of 2015 approximately 12 months following their completion of clinical anatomy. The class of 2015 clinical anatomy lab did not include the iPad driven radiologic anatomy minicourse and thereby functioned as the control group. The test was then administered to the Class of 2016 at the same 12 month interval following completion of their clinical anatomy course. First order test questions focused on anatomic concepts were utilized. No imaging was utilized on the exam. The study is IRB approved.

RESULTS

108 of 208 Class of 2016 second year clinical anatomy students completed the 20 multiple choice anatomy examination 12 months following completion of their clinical anatomy course including the iPad driven anatomic radiology laboratory minicourse. The Class of 2016 scored an average 60.7% on the exam. 113 of 202 members of the control group, Class of 2015, scored an average of 55.6%. The experimental group performed statistically significantly better (P=0035) with a 9.1% improvement. Both the class of 15 and 16 had comparable MCAT scores average aggregates of 32.8 and 32.0 respectively.

CONCLUSION

An iPad driven radiologic anatomy laboratory minicourse led by radiologists proved effective in improving student's 12 month retention of clinical anatomy knowledge.

CLINICAL RELEVANCE/APPLICATION

Small group anatomy instruction is effective at teaching anatomic concepts through imaging.

SSK10-05 Coming Out of the Dark: A Curriculum for Teaching and Evaluating Radiology Residents' Communications Skills through Simulation

Wednesday, Dec. 2 11:10AM - 11:20AM Location: S102D

Participants

Carolynn M. Debenedectis, MD, Worcester, MA (*Presenter*) Nothing to Disclose
Jean-Marc Gauguier, MD, PhD, Worcester, MA (*Abstract Co-Author*) Nothing to Disclose
Joseph Makris, MD, Worcester, MA (*Abstract Co-Author*) Nothing to Disclose
Stephen D. Brown, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Max P. Rosen, MD, MPH, Worcester, MA (*Abstract Co-Author*) Stockholder, Everest Scientific Inc; Consultant, PAREXEL International Corporation; Stockholder, Cynvenio Biosystems, Inc; Medical Advisory Board, Cynvenio Biosystems, Inc

PURPOSE

The purpose of this project is to develop a curriculum to teach radiology residents communication skills through simulation. Communication skills are a core competency for which radiology residents must be evaluated. As Radiology has moved from "film" to PACS, opportunities for direct communication between Radiologists and referring clinicians have decreased. Additionally, radiologists increasingly must communicate effectively with patients. Simulation has been shown an effective tool, and we believe it can be used to teach and evaluate communication skills for radiology residents.

METHOD AND MATERIALS

Current first (N=5) and fourth year (N=3) radiology residents (PGY 2 and PGY 5) participated in 6 baseline communication scenarios with trained professional patient "actors". Scenarios included error and apology, delivering bad news, canceling examination/procedure, radiation risk counseling, giving results in pediatric imaging, and angry referring physician. Resident performance in the scenarios was evaluated by attending radiologists with prior communication skills training and the patient actors, using the Gap-Kalamazoo Communication Skills (GKCS) Assessment Form. All activities were videotaped at our interprofessional Center for Experiential Learning and Simulation (ICELS). Immediately following completion of all 6 scenarios, residents were debriefed, and defined teaching points were identified. Following a 2 week washout period and additional training, residents participated in a second similar simulation.

RESULTS

The average GKCS score for all the residents improved to 79% (range 66-86%) in part 2 compared to 74% (range 65-82%) in part 1. Fourth year residents performed better on both part 1 and 2 of the simulation when compared to first year residents. Average fourth year's score for part 1 was 77% vs. 72% for first year residents. Average fourth year's score for part 2 was 81% vs. 76% for first year residents.

CONCLUSION

Simulation is a promising method for teaching and evaluating residents' communication skills.

CLINICAL RELEVANCE/APPLICATION

Simulation can be used to teach and evaluate radiology residents' communication skills in compliance with the core competency requirement.

SSK10-06 Use of in-situ High-fidelity Severe Contrast Reaction Simulation Radiology Team Performance Testing to Identify Gaps in Knowledge for Teamwork Skills Based on TeamSTEPPS®

Wednesday, Dec. 2 11:20AM - 11:30AM Location: S102D

Participants

Carolyn L. Wang, MD, Seattle, WA (*Presenter*) Nothing to Disclose
Sankar Chinnugounder, MD, Worcester, MA (*Abstract Co-Author*) Nothing to Disclose
Daniel S. Hippe, MS, Seattle, WA (*Abstract Co-Author*) Research Grant, Koninklijke Philips NV; Research Grant, General Electric Company
Ryan O'Malley, MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
Puneet Bhargava, MD, Shoreline, WA (*Abstract Co-Author*) Editor, Reed Elsevier
Sadaf F. Zaidi, MD, Spokane, WA (*Abstract Co-Author*) Nothing to Disclose
William H. Bush JR, MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To perform in-situ hands-on high-fidelity simulation testing of teams of radiology residents, nurses and technologists with a severe contrast reaction scenario to identify gaps in knowledge on teamwork skills.

METHOD AND MATERIALS

Eleven nurses, 11 technologists and 11 PGY2 radiology residents were recruited for this IRB and HIPAA compliant study. Participants were arranged into teams of 3 (1 resident, 1 nurse and 1 technologist). All participants underwent TeamSTEPPS® training with an interactive lecture. Eleven teams underwent in-situ high-fidelity simulation scenario testing with a severe contrast reaction scenario with built in medical mistakes. Three TeamSTEPPS® expert trainers independently graded the teamwork skills (TS) tested and their grades were averaged. Grades (out of 100%) for each skill were computed by adding up grades for each sub-item and overall grades were computed by adding up grades for each skill. The sub-item grades were examined to determine on which skill sub-items participants generally performed particularly poorly to help refine the training program.

RESULTS

The overall TS grades were low (52±6%). The grades for each major skill were also low (40-59%) including SBAR (Situation Background, Assessment, Recommendation), closed loop communication, CUS (Concerned, Uncomfortable, Safety issue), huddle and leadership. For SBAR, the low grades were due to participants rarely using the specific word from the acronym and not offering recommendations. For closed-loop communication, participants rarely named an individual for a call out and frequently failed to close the loop. Only 2 of the 11 groups had an identifiable team leader on whom all graders agreed. The majority of huddles were not being performed in a timely fashion and the teams rarely attempted to create a shared mental model.

CONCLUSION

In-situ high-fidelity severe contrast reaction simulation testing of teams of radiology residents, nurses and technologists can be used to identify knowledge gaps in teamwork skills. This allows focused training to include improving methods of relaying patient information, identifying a situational leader, and proper closed loop communication.

CLINICAL RELEVANCE/APPLICATION

Patient safety requires effective teamwork skills. Training radiology teams (nurses, technologists and radiologists) should focus on teamwork skills and in-situ high-fidelity simulation testing can identify specific gaps.

Honored Educators

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Puneet Bhargava, MD - 2015 Honored Educator

SSK10-07 Teaching from Every Angle: Integrating 3D Anatomy with Interactive Case-based Radiology Playlists

Wednesday, Dec. 2 11:30AM - 11:40AM Location: S102D

Participants

Derek A. Smith, MBChB, Edinburgh, United Kingdom (*Presenter*) Nothing to Disclose

Jeremy B. Jones, MRCP, FRCR, Melbourne, Australia (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

As clinical imaging becomes more accessible, radiologists have an ever-increasing opportunity to be actively engaged with medical student teaching. We sought to assess how this teaching can be aided by innovative approaches and new technologies.

METHOD AND MATERIALS

Case based tutorials were designed for medical students on their clinical orthopaedics placement. Normal anatomy was viewed and manipulated using a three-dimensional (3D) imaging 'Sectra Table'. Plain film and cross-sectional imaging was then displayed through the device to discuss common and important fractures and injuries. Groups of 6-10 students attended sessions run by a radiologist (consultant or clinical fellow). Post-session feedback was collected online with quantitative Likert scales and qualitative free-text comments.

RESULTS

Sessions were rated by 53 students (from January to March 2015) on a scale of 'poor' (1) to 'awesome' (5), for the following criteria: content (median score 4.6), relevance (4.6), style of presentation (4.8) and quality of display aids (4.9). Feedback praised the use of the imaging table relating 3D anatomy to clinical imaging ("brilliant aid, great technology"). The ability to view plain film and cross-sectional imaging and explore associated anatomical structures was highly valued. Having the opportunity to go through imaging on a case-by-case basis with a radiologist was appreciated and many requested more radiology teaching.

CONCLUSION

Using the interactive 3D surface is an exciting new model for student and teacher, and this was reflected by the high feedback scores and comments. It reinforces the importance of understanding underlying anatomy and highlights the value of the information gained from plain films. Interactive teaching with a radiologist proved popular and helps to introduce advanced imaging concepts at an appropriate level.

CLINICAL RELEVANCE/APPLICATION

Integrated anatomy and radiology teaching with an interactive case-based approach using novel 3D technology proved popular and engaged students while enhancing their clinical knowledge.

SSK10-08 Improving First-Year Resident Education in Musculoskeletal Imaging: Comparison of Workflow Using the Customary Chronologic Approach with the Novel Anatomy Based Approach

Wednesday, Dec. 2 11:40AM - 11:50AM Location: S102D

Participants

Leon Lenchik, MD, Winston-Salem, NC (*Presenter*) Nothing to Disclose

Robert D. Boutin, MD, Sacramento, CA (*Abstract Co-Author*) Nothing to Disclose

Jasjeet Bindra, MBBS, MD, Davis, CA (*Abstract Co-Author*) Nothing to Disclose

Bahram Kiani, MD, Winston Salem, NC (*Abstract Co-Author*) Nothing to Disclose

Cyrus Bateni, MD, Sacramento, CA (*Abstract Co-Author*) Nothing to Disclose

Scott D. Wuertzer, MD, MS, Winston-Salem, NC (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Determine if organization of a PACS worklist by chronologic order versus anatomic order influences first-year radiology resident performance, resident satisfaction, or faculty satisfaction.

METHOD AND MATERIALS

In a prospective study conducted at two major academic institutions, first-year residents on their first musculoskeletal imaging rotation were randomly divided into two groups based on chronologic or anatomic sorting of their worklist. Residents in the chronologic group (CG) sorted their worklist based on the date of the study with the oldest studies interpreted first. Residents in the anatomy group (AG) sorted their worklist based on an anatomic region for the day (Day 1: Shoulder, humerus, elbow; Day 2: Forearm, wrist, hand; Day 3: Pelvis, hip; Day 4: Femur, knee, leg; Day 5: Ankle, foot). At the end of the 4-week rotation, residents took a 25-question, image-based examination and completed a satisfaction survey, which assessed experience, teaching, and workload on a scale of 1 to 5 (1=poor; 5=excellent). For each resident, the faculty completed a similar survey that assessed the experience, teaching, and workload. Resident and faculty surveys also included three open-ended questions to provide qualitative assessment of satisfaction. Data from the two institutions were pooled, and the CG and AG groups were compared.

RESULTS

There were 7 residents in the CG group and 9 in the AG group. The numbers of correct answers on the post-rotation examination were slightly higher in the AG group (14.8) than the CG group (14.1). Resident satisfaction scores of overall experience were higher in the AG group (4.7) than the CG group (4.0). Resident satisfaction scores relating to teaching were similar in the AG group (4.8) and CG group (4.9). Resident satisfaction scores relating to workload were similar in the AG group (3.9) and CG group (4.0). Faculty satisfaction scores were similar in the two groups. Qualitative assessment of resident and faculty satisfaction comments were overwhelmingly positive for both groups. The single negative comment was from one resident assigned to the CG group.

CONCLUSION

For first-year residents rotating on the musculoskeletal service, organizing the PACS worklist by anatomic region rather than by date improves learning and increases resident satisfaction.

CLINICAL RELEVANCE/APPLICATION

Novel approaches to managing resident workflow can improve their experience on the musculoskeletal service.

SSK10-09 Health Service, Policy and Research Keynote Speaker: Simulation in Medical Education: An Evolving Tool for Training in Radiology

Wednesday, Dec. 2 11:50AM - 12:00PM Location: S102D

Participants

Laura M. Fayad, MD, Baltimore, MD (*Presenter*) Nothing to Disclose

Health Service, Policy and Research Wednesday Poster Discussions

Wednesday, Dec. 2 12:15PM - 12:45PM Location: HP Community, Learning Center

HP

AMA PRA Category 1 Credit™: .50

Participants

Aine M. Kelly, MD, Ann Arbor, MI (*Moderator*) Nothing to Disclose
 Paul P. Cronin, MD, MS, Ann Arbor, MI (*Moderator*) Nothing to Disclose

Sub-Events**HP226-SD- WE A1 Doctors and Wikipedia: Perceptions, Attitudes and Interactions**

Station #1

Participants

Richard Pullicino, MD, Attard, Malta (*Abstract Co-Author*) Nothing to Disclose
 Reuben Grech, MD, FRCR, Msida, Malta (*Presenter*) Nothing to Disclose
 Henry Potts, PhD, London, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Assess how and under what circumstances doctors interact with Wikipedia. Explore why Wikipedia is occasionally preferred to more authoritative sources of medical information.

METHOD AND MATERIALS

The study used a mixed-method research approach that involved the collection and analysis of both qualitative and quantitative data. The study was carried out on local doctors working at the local hospital. Qualitative Phase - Focus Group The first phase of the study was a qualitative exploration of how and under what circumstances doctors interact with Wikipedia. A focus group involving doctors working in different grades and specialties was organized. Quantitative Phase The qualitative findings were consequently used in the development of the online questionnaire instrument which was employed in the second phase of the study.

RESULTS

Focus Group Predominant Themes Tensions between participating doctors affirming its use in clinical practice and at the same time condemning it and not trusting it. Theory versus experience The trustworthiness of information sources Convenience Expertise Challenge of Wikipedia on Doctor-Patient Relationship Questionnaire 176 respondents. 67% said that they use wikipedia one or twice a week and 92% would not tell their patients that they would have consulted Wikipedia for clinical purposes. Wikipedia was ranked as the most accessible medical information source however one of the least trustworthy and of relatively low quality.

CONCLUSION

Leckie et al in 1996 had asserted that cost is always the preferred criteria for the choice of an information resource. The preservation of their identity as the key holders of medical knowledge seems to be one of their greatest worries for doctors as they feel threatened by the availability of information made on Wikipedia. Their admission in using Wikipedia themselves proves paradoxical, eliciting a love-hate relationship for this resource. The use of Wikipedia by the medical profession seems to be all pervasive and not limited to juniors. The format and design of Wikipedia renders it an efficient readily accessible tool even in time-constrained scenarios.

CLINICAL RELEVANCE/APPLICATION

Medical professionals would prefer consulting more authoritative websites than Wikipedia. Easier accessibility by the general public could also lead to the perception of further 'deprofessionalization' of doctors.

HP227-SD- WE A2 Safety and Diagnostic Efficacy of Dotarem® (Gadoteric Acid) for MR Mammography: Diagnosis vs. Cytological Findings

Station #2

Participants

Matthias Hackenbroch, MD, Euskirchen, Germany (*Presenter*) Travel support, Guerbet SA
 David C. Maintz, MD, Koln, Germany (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Investigation of the safety and diagnostic efficacy of Dotarem® (Guerbet, Roissy, France) for MR mammography.

METHOD AND MATERIALS

Between January 2012 and October 2013, a total of 1,537 patients, mean age 51.4 ± 12.3 years (mean + SD) in 15 centres underwent MR mammography with Dotarem®, most commonly to exclude recurrence (43.4%), screen at-risk patients (27.4%) or clarify an indeterminate finding (16.5%). Image quality and diagnostic findings were documented. Where known, cytological findings were noted. Adverse reactions and serious adverse reactions were recorded.

RESULTS

Overall, 54.8% of the examinations were carried out in postmenopausal women, 33.6% in premenopausal and 11.6% in perimenopausal women; 22 of 1,537 women (1.4%) had a mutation in the BRCA genes. The mean volume of contrast agent injected was 15.1 ± 4.3 mL (mean + SD), proving breast MRI examinations with Dotarem® were performed at the approved dose of 0.1

mmol/kg. Adverse reactions occurred in 5 of 1,537 women (0.3%). One adverse reaction was serious (tachycardia, dysphagia, urticaria, rash). All of the patients with adverse reactions recovered fully after the examination. In 99.2% of cases doctors were able to make a diagnosis, most commonly benign changes (56.5%). Invasive ductal carcinoma was diagnosed in 72 cases. On the basis of subsequent cytological examinations the diagnosis of invasive ductal carcinoma was confirmed in 93.5% of cases. The image quality was very good or good in 91.6% of examinations.

CONCLUSION

Dotarem® (gadoteric acid) is a safe contrast agent that enables diagnosis with optimal image quality. MR mammography with Dotarem® has been shown to be a reliable method for detecting invasive ductal carcinomas.

CLINICAL RELEVANCE/APPLICATION

Dotarem® (gadoteric acid) is a safe contrast agent that enables diagnosis with image quality. MR mammography with Dotarem® has been shown to be a reliable method for detecting invasive ductal carcinomas.

HP228-SD- WEAS **Laying the Foundation for Interventional Radiology (IR) in Underdeveloped Countries through the Strategic Use of Established Infrastructure and Workforce**

Station #3

Participants

Jay Shah, BA, MD, New York City, NY (*Presenter*) Nothing to Disclose
Mohammed Hoque, MD, Jamaica Estates, NY (*Abstract Co-Author*) Nothing to Disclose
Sarah Kantharia, MD, Brooklyn, NY (*Abstract Co-Author*) Nothing to Disclose
Eric F. Greif, DO, Huntington, NY (*Abstract Co-Author*) Nothing to Disclose
Scott E. Corelli, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Shaun M. Honig, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Sergei Sobolevsky, Brooklyn, NY (*Abstract Co-Author*) Nothing to Disclose
David Mobley, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

1. Learn basic models of primary and specialty healthcare in resource scarce regions. 2. Learn the landscape of operators (eg OB/GYN) performing minimally invasive procedures in remote areas. 3. Learn the accessibility and resource challenges of IR in the developing world.

METHOD AND MATERIALS

As a field, Interventional Radiology prides itself in continuous innovation. IR is often inseparable from the highly technical and resource intensive tools it demands. IR offers patients a safe, fast and minimally invasive solution to serious health problems which may otherwise necessitate open surgery. As radiology continues to evolve in the underserved world, IR lags behind due to lack of resources and experienced staff. Critical analysis of demographics, infrastructure, resource allocation, and workforce is necessary to lay the foundation for IR in the undeveloped world.

RESULTS

Resource allocation and workforce training centered on IR services is rare in the industrializing world. As technical and financial means for equipment continue to be more economically viable, the practice of IR is unfeasible without a foundational work force. General practitioners are often the only point of care for the patient population ethically compelling us train these physicians in skillsets needed for common procedures. As medical architecture in these regions continue to mature and necessitate more IR services, this initial workforce will sustain the skillset within a training system that overcomes the practical and economic limitations of traditional training. Furthermore, extrapolating from IR experiences in humanitarian missions, and military engagements can provide insight into strategically modifying the most useful procedures in emerging economies.

CONCLUSION

Having a network of skilled providers to locally develop IR is most viable by engaging general practitioners to learn specific techniques to use within the current health care scheme. With an eye to eventually establishing a sustainable IR skillset for useful and applicable services in the developing world, introducing these concepts to local providers will eventually yield a future environment accepting and necessitating a dedicated IR curriculum.

CLINICAL RELEVANCE/APPLICATION

Developing economies demand health care solutions which are safe and effective, as IR practitioners it is our responsibility to determine how we can responsibly train and implement our knowledge base abroad to improve global health.

HP229-SD- WEAS **Radiology Jobs: Uncovering Hidden and Not-so-hidden Opportunities**

Station #4

Participants

Alexander S. Misono, MD, MBA, Boston, MA (*Presenter*) Nothing to Disclose
Sanjay Saini, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Anand M. Prabhakar, MD, Somerville, MA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

The radiology job market remains daunting. Trainees choosing fellowships benefit from understanding future employer needs. Radiology practices may similarly refine recruiting practices. This study quantitatively analyzes the current radiology job landscape.

METHOD AND MATERIALS

Job postings on the ACR Career Center online portal between June 2014 and March 2015 were reviewed. As entries are frequently added and removed, posts were manually collected weekly. Postings were recorded in a database, including date; practice; location; specialty/subspecialty; job type; years of experience; salary; job description. The database was analyzed to characterize

employer needs, salary, partnership track availability, and job availability by geography.

RESULTS

There were 1,160 job postings during the study period. Of these, 1003 (86%) were diagnostic, 153 (13%) interventional, and 4 (0.3%) administrative roles. Most jobs were in private practice (75%) as compared with academic (16%) and other (9%). While many did not require a specific specialty (43%), most frequent needs were breast (19%), neuroradiology (11%), musculoskeletal (8%), and body (7%). Of non-breast jobs, roughly 32% indicated interest in breast imaging skills. A minority (13%) requested prior experience of greater than 1 year, with some seeking 7-10 years of experience. Although most (87%) were full-time positions, part-time, temporary, or contractor roles were described in the remaining (13%). Salary data was rarely reported (6%), with a wide range of \$100-\$600,000. The most jobs were based in CA (11%), NY(7%), PA (6%), and IL (6%). However, when indexed per million population, DC (10.6), NV (8.8), NH (6.8), CT (6.4), and HI (6.3) had the highest job rates. Roughly 33% of postings described partnership tracks, with the highest rates in New England (58%), Pacific NW (56%), Midwest (40%), and Southern (40%) regions and the lowest in the Mountain (21%) , Mid-Atlantic (22%), and Southwest/east (20-26%) regions.

CONCLUSION

Majority of radiology jobs remain in private practice general radiology. Breast, neuroradiology, and MSK radiology were most frequently desired among subspecialty training. Advertised partnerships tracks were less common and varied geographically.

CLINICAL RELEVANCE/APPLICATION

Employment opportunities for radiologists remain limited. Understanding the landscape will help guide trainees with fellowship choices and radiology practices in hiring practices.

HP230-SD- WEAS Can Assessing Trends in CT Utilization Improve Resource Allocation for Funds in Global Outreach? Retrospective Analysis of Trends in CT Utilization in an East African Nation for One Year

Station #5

Participants

Supriya Gupta, MBBS, Augusta, GA (*Abstract Co-Author*) Nothing to Disclose

David A. Rosman, MD, Boston, MA (*Presenter*) Nothing to Disclose

Louise Kalisa, Kigali, Rwanda (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Global outreach in radiology has steadily developed in the last few years, lagging behind similar efforts in other fields of medicine. Our preliminary efforts to develop and improve CT utilization in Rwanda can be used to gauge and understand the wide gap between existing needs and available resources. Our hypothesis is analyzing current CT utilization in such countries can help us to understand the requirements, disease prevalence and burden and resource deficiency so that goal-directed efforts can be undertaken to improve imaging care globally.

METHOD AND MATERIALS

Retrospective analysis of one year CT volume was undertaken from March 2014 through February 2015. The scanner was down for one month during the period of analysis. For each CT exam performed following data was recorded - body part (neuro/body/other), a one word summary "conclusion" of the study (trauma/infection/neoplastic/congenital/other), date of study, gender of Patient and specific findings.

RESULTS

The analysis revealed a total of 4,955 CT exams of which the majority 71.2% (3527/4955) were neuro followed by 27.5% body imaging (1363/4955) and 1.3% were others (mostly extremities). Among the brain exams, 36% (999/2779) were normal. Among the positive studies, 42.1% (749/1780) were for trauma, followed by ischemia (14%), neoplasm (11.6%) and infection (10.7%). Among the cervical spine studies, most common conclusion was trauma (69.2%) then degeneration (29.6%). For body imaging, among the positive studies, the most common conclusion for chest CT was infection, 31.4% (132/42 of which 72 (54.5%) cases were tuberculosis) followed closely by neoplasia, 29.5% (124/421); while most common conclusions for positive abdomen CT were neoplasm, 401/939-42.7% followed by infection, 118/939-12.6%.

CONCLUSION

Our study revealed that a large majority of neuro cases are performed for trauma while for body imaging, infection and neoplasm dominate. Infection due to tuberculosis and other disease like cerebral malaria is frequently seen. Knowledge of disease epidemiology and imaging resource utilization can help in providing care in such developing countries.

CLINICAL RELEVANCE/APPLICATION

Understanding trends in CT utilization across the globe can provide an insight into the needs and requirements of imaging and other medical resources in developing countries.

Health Service, Policy and Research Wednesday Poster Discussions

Wednesday, Dec. 2 12:45PM - 1:15PM Location: HP Community, Learning Center



AMA PRA Category 1 Credit™: .50

Participants

Aine M. Kelly, MD, Ann Arbor, MI (*Moderator*) Nothing to Disclose
Paul P. Cronin, MD, MS, Ann Arbor, MI (*Moderator*) Nothing to Disclose

Sub-Events**HP231-SD- Expectations of Modern Day Radiology Applicants: The Interview Day and Beyond
WEB1**

Station #1

Participants

Jonathan Revels, DO, Norfolk, VA (*Presenter*) Nothing to Disclose
Michele Retrouvey, MD, Norfolk, VA (*Abstract Co-Author*) Nothing to Disclose
Tina Cunningham, PhD, Norfolk, VA (*Abstract Co-Author*) Nothing to Disclose
Sarah C. Shaves, MD, Virginia Beach, VA (*Abstract Co-Author*) Nothing to Disclose
Lester S. Johnson, MD, PhD, Virginia Beach, VA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

There has been an increased number of vacant residency positions in recent years. The number of residency programs entering the Supplemental Offer and Acceptance Program (SOAP) has increased as a result. Given the recent downtrend in the popularity of radiology, we sought to determine which program features were most important to applicants during the application season.

METHOD AND MATERIALS

A survey regarding radiology residency program benefits/features such as the interview experience, modifiable and non-modifiable features of a residency, financial benefits and educational benefits was disseminated to radiology applicants via their school's radiology interest group, the Electronic Residency Application Service (ERAS) and AuntMinnie.com targeting applicants who applied to residency prior to 2013-14, during 2013-14, and during 2014-15. Statistical analysis was performed to determine program features/benefits that had statistically significant affect on ranking decisions in the Match.

RESULTS

We received 138 responses, 120 males and 18 females, and similarly divided between application cycles. Comparing across residency cycles we found no statistically significant change in how the interview experience (e.g, pre-interview dinner), financial benefits (e.g, moonlighting), and educational benefits (e.g., education stipend) affected ranking. However, there was a statically significant increase in the affect of modifiable features (e.g, friendliness of residents) and non-modifiable features (e.g., geographic location). Comparing academic to non-academic career focused applicants, only educational features affected ranking. No statistically significant difference was noted in responses from males versus females.

CONCLUSION

Given the recent decreased popularity of radiology as a residency, programs have found it difficult to fill their positions in the Match. Emphasis on certain features, such as friendliness of current residents, geographic location and educational items, may allow programs to appeal to the reduced applicant pool.

CLINICAL RELEVANCE/APPLICATION

The paucity of radiology applicants has made the Match stressful and difficult for residency programs. Understanding applicants' selection criteria may enable programs to put their best foot forward, alleviating some stress associated with recruiting.

**HP232-SD- Preoperative Chest Radiography: Current Recommendations, Trends, and Harms
WEB2**

Station #2

Participants

Yayone Rivaud, BA, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Michael A. Kadoch, MD, Stanford, CA (*Presenter*) Nothing to Disclose
Martin P. Edwards, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Vivek Joshi, BEng, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Lea Azour, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Joseph A. Marchione, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Thomas J. Ward, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose
Adam Jacobi, MD, New York, NY (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

According to ACR Appropriateness Criteria, routine preoperative chest radiographs are not generally recommended. The purpose of this study is to assess recent trends in preoperative chest radiography and to evaluate for potential harms associated with this radiologic examination.

METHOD AND MATERIALS

A search of the radiology information system was performed to identify all preoperative chest radiographs performed at a single tertiary-care medical center over a complete 7-year period from January 1, 2007 to December 31, 2013. Utilization trends were

evaluated. 2,500 consecutive preoperative chest radiographs from 2012 were assessed for potential incidental detections.

RESULTS

From 2007-2013, a total of 25,737 preoperative chest radiographs were performed (3,156 in 2007, 3,147 in 2008, 3,065 in 2009, 2,118 in 2010, 3,987 in 2011, 4,834 in 2012, and 5,430 in 2013). A mild steady decline in the utilization of this examination is appreciated for 2007-2010. However, data for 2011-2013 reveals a steeper increase in the utilization of this study in more recent years, which is discordant with current evidence-based recommendations. Although an increase in the number of operative procedures performed may explain this trend in part, it is unlikely to be the only reason. Even though only 2% of preoperative chest radiographs are believed to alter patient management, 36.4% of the 2,500 consecutive studies assessed from 2012 had at least one positive finding, suggesting that at least some degree of incidental detection occurs with these examinations.

CONCLUSION

Recent trends in preoperative chest radiography are discordant with current evidence-based recommendations. There is suggestion that at least some degree of incidental detection occurs with these studies, which may lead to further unnecessary downstream testing.

CLINICAL RELEVANCE/APPLICATION

The development of ACR Appropriateness Criteria are a step forward in advancing evidence-based practice in radiology, but the implementation of these recommendations may not always occur as expected.

HP233-SD- Readability of Mainstream Radiology Journals WEB3

Station #3

Participants

Katy M. Edmonds, Lodon, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

Lyn Zimmo, MBBS, Cardiff, United Kingdom (*Presenter*) Nothing to Disclose

Katherine S. Moore, MBChB, BSC, Cardiff, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

Ian A. Zealley, MD, Dundee, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

Richard D. White, MBChB, FRCR, Cardiff, United Kingdom (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Automated readability tools in medicine have been studied in relation to patient information, consent forms, and radiology reports. The readability of radiological literature has not been studied using these tools. The current study quantifies the readability of mainstream radiology journals using validated metrics and seeks to establish whether educational or scientific articles are more readable

METHOD AND MATERIALS

From 2014, fifty consecutive original scientific articles from each of Radiology (Rad) and Clinical Radiology (CR) journals and 50 consecutive educational articles from each of RadioGraphics (RG) and Insights into Imaging (III) were analyzed. An automated readability tool calculated previously validated readability metrics, with particular emphasis on Flesch Reading Ease Score (FRES). (Comparative scores: FRES 0-30 very difficult, understood by 4.5% of US adults; FRES 30-49 difficult; Time Magazine FRES ~52, Reader's Digest FRES ~65)

RESULTS

FRES mean +/- standard deviation: overall 27.7+/-10.0; Rad 31.1+/-9.2; CR 32.1+/-10.7; III 25.6+/-7.2; RG 22.0+/-9.1. One way ANOVA showed significant differences between journal mean FRES ($P < 0.001$). Tukey's test revealed no significant differences between Rad vs CR or III vs RG, but significant differences between Rad vs III ($P < 0.05$), Rad vs RG, CR vs III and CR vs RG (all $P < 0.01$). Educational articles (RG and III, combined FRES 23.8+/-8.4) had significantly lower FRES than scientific articles (Rad and CR, FRES 31.6+/-9.9), $P < 0.0001$ unpaired T test. Lowest FRES was -1.5 (RG), highest FRES 57.5 (Rad)

CONCLUSION

Radiology literature appears very difficult to read using validated readability tools. The overall FRES of 27.7 is in line with general medical literature (JAMA 28.7, BMJ 31.5, BMJ 2002;325:1451-2). Surprisingly, educational articles are significantly harder to read than scientific articles. Radiology literature must contain complex medical jargon (e.g. anatomical descriptors, pathologies). However, key messages must be conveyed clearly to minimize the potential for misinterpretation by both medical professionals (particularly for non-native English speakers) and others, including journalists and the general public

CLINICAL RELEVANCE/APPLICATION

Radiology literature is very difficult to read as determined by validated readability tools. Authors and editors may consider utilising such tools to ensure that key messages are conveyed clearly

HP234-SD- Gender-specific Factors Affecting Medical Student Interest in Radiology: Results of a Survey WEB4

Station #4

Participants

Megha Nayyar, BA, Los Angeles, CA (*Presenter*) Nothing to Disclose

Bhushan Desai, MBBS, MS, Los Angeles, CA (*Abstract Co-Author*) Nothing to Disclose

Steven Cen, PhD, Los Angeles, CA (*Abstract Co-Author*) Nothing to Disclose

M. Victoria Marx, MD, Los Angeles, CA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To identify factors that dissuade female medical students from choosing Radiology as a medical specialty

METHOD AND MATERIALS

In this IRB-approved study, third year medical students were prospectively enrolled to complete a survey questionnaire about their

level of interest in radiology on a scale ranging from 0 (low) to 10 (high). They were also asked to choose either no / negative / positive influence for factors such as: money, lifestyle, type of skills, residency, work environment, interests, concerns, and influences on choosing a medical specialty. Mean, median, standard deviation, and p-values were calculated and compared for responses from male versus female medical students.

RESULTS

125 third year medical students participated, of which 48% were females (F) and 51% were males (M). The average level of interest in Radiology was 2.5 for F and 3.6 for M ($P < .03$). F more frequently rated availability of jobs (66% vs 50%; $P < .01$) and female role models in the field (50% vs 9%; $P < .0001$) as a positive influence whereas M more frequently rated private practice opportunities (48% vs 28%; $P < .04$), visual work (80% vs 60%; $P < .03$), technological work (70% vs 33%; $P < .0001$), and books/career choice pamphlets on choosing specialties (25% vs 7%; $P < .008$) as a positive influence in choosing a medical specialty. Responses from M and F were concordant for factors such as, academic opportunities (53% (M) vs 52% (F); $P < .84$), flexibility of lifestyle (86% (M) vs 90% (F); $P < .74$), ability to work remotely (56% (M) vs 56% (F); $P < 1$), written communication as a skill (42% (M) vs 43% (F); $P < .86$), attention to detail (65% (M) vs 65% (F); $P < 1$), and professional team work (75% (M) vs 77% (F); $P < .67$), all of which were rated as having positive influence.

CONCLUSION

Factors such as, lack of female role models in the field, availability of jobs as well as Radiology being more visual and technological might be preventing females from going into Radiology. This may have significant implications in understanding why women are underrepresented in Radiology but these results need to be validated by conducting a similar survey questionnaire at other academic institutions.

CLINICAL RELEVANCE/APPLICATION

The application pool for radiology has consisted of 30% women and 70% men. The number of women going into radiology has stayed constant despite the increase in matriculation in U.S medical schools.

HP235-SD- The Place of Women in the Radiology in France WEBS

Station #5

Participants

Nadya Pyatigorskaya, Paris, France (*Presenter*) Nothing to Disclose

Mickael Ohana, MD, MSc, Strasbourg, France (*Abstract Co-Author*) Nothing to Disclose

Lucy C. Dimarco, Dijon, France (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

This survey was aimed at assessing the place that women have, currently, in the field of radiology. We tried to find out if being a woman influences the radiology carrier, if there is a difference between men's and women's professional choices, and if these choices are free.

METHOD AND MATERIALS

A list of 26 multiple-choice questions was sent, by means of google.drive, to 830 French residents, fellows, and young radiologists. The number of those who responded was 206.

RESULTS

Half of the responders were women and half were men, with the mean age of 27.5. As for the career choice, most men and women have a strong preference for mixed, private and public, practice. However, more women than men consider the fixed salary to be more important than independence of private practice (20% against 11%). The same preference is observed for the hospital practice, with 18% of women and only 8% of men being interested in it, while for university positions the trend is opposite. Men and women give similar arguments for their career choice such as stability, comfort, global work load, recognition, independence, authority, or even proximity of the work place to home. Working hours and vacations are slightly more important for women. On the average, men and women want to work 4.5 and 4 days a week, respectively. However, while men are willing to earn from 10.000 to 20.000 euro a month, women could do with twice less. For 50% of woman responders, pregnancy could be a problem in the period of residency and fellowship. 64% would, if possible, try to hide their pregnancy when applying for the fellowship position. 74% of women think that maternity will influence their professional choice. 31% of women have already felt themselves discriminated when applying for a position or being chosen to participate in a conference.

CONCLUSION

The way of practicing medicine is changing nowadays. Both men and women expect less work load, more comfort, and more free time. Although the original motivations of men and women are similar, later women usually choose positions offering more stability and their salary expectations are not as big. This choice is mostly motivated by the difficulties caused by maternity.

CLINICAL RELEVANCE/APPLICATION

For young woman radiologists, pregnancy can be particularly problematic during the residency and fellowship periods and can be the origin of inequality with their male colleagues.

SPHA41

Hospital Administrator's Symposium

Wednesday, Dec. 2 1:30PM - 4:50PM Location: S103AB



AMA PRA Category 1 Credits™: 3.25
ARRT Category A+ Credits: 4.00

Participants

Jonathan W. Berlin, MD, Evanston, IL (*Moderator*) Nothing to Disclose

LEARNING OBJECTIVES

1) Describe possible future health payment and delivery changes and their relationship to radiology. 2) Consider practical techniques for leading change in radiology. 3) Understand methods of radiology data analysis that may be helpful to a hospital. 4) Consider how the principles of high reliability can improve radiology quality. 5) Contemplate the benefits of radiology integration in the era of population health. 6) Familiarize themselves with the 2017 CMS mandate for decision support regarding advanced imaging.

ABSTRACT

This program is geared toward physicians, non-physician healthcare providers, and administrators. Vendors will also find it helpful. The session will be comprised of six speakers, each speaking for 30 minutes. There are two scheduled question and answer periods with ample opportunity for audience discussion if desired. Speakers are a mix of physicians and administrators, and topics are designed to address current strategic planning and economic issues pertinent to radiology, including leadership, the leveraging of big data, radiology quality, future healthcare payment and delivery, radiology integration and population health management, and the 2017 CMS mandate for pre-order decision support.

URL

Sub-Events

SPHA41A Introduction

Participants

Jonathan W. Berlin, MD, Evanston, IL (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

SPHA41B How Your Radiology Group's Big Data can Leverage Your Hospital's Success

Participants

T. Scott Law, Carmel, IN (*Presenter*) Founder, Zotec Partners; CEO, Zotec Partners

LEARNING OBJECTIVES

View learning objectives under main course title.

SPHA41C Practical Techniques for Leading Change in Radiology

Participants

Frank J. Lexa, MD, Philadelphia, PA (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

SPHA41D Healthcare Economics: Market Trends and Transformation

Participants

Tom E. Szostak, Tustin, CA (*Presenter*) Employee, Toshiba Corporation

LEARNING OBJECTIVES

View learning objectives under main course title.

ABSTRACT

URL

SPHA41E Question and Answer 1

Participants

T. Scott Law, Carmel, IN (*Presenter*) Founder, Zotec Partners; CEO, Zotec Partners
Frank J. Lexa, MD, Philadelphia, PA (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

SPHA41F Radiology Integration: How and Why in the Era of Population Health Management

Participants

John P. Anastos, DO, Park Ridge, IL (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

SPHA41G The 2017 Mandate for Pre-order Decision Support: What Does It Mean and Why Is It Significant?

Participants

Mark D. Hiatt, MD, MBA, Salt Lake City, UT, (mark.hiatt@regence.com) (*Presenter*) Medical Director, Regence BlueCross BlueShield; Board Member, RadSite ; Former Officer, HealthHelp, LLC

LEARNING OBJECTIVES

View learning objectives under main course title.

ABSTRACT

View abstract under main course title.

SPHA41H Question and Answer 2

Participants

John P. Anastos, DO, Park Ridge, IL (*Presenter*) Nothing to Disclose

Mark D. Hiatt, MD, MBA, Salt Lake City, UT, (mark.hiatt@regence.com) (*Presenter*) Medical Director, Regence BlueCross BlueShield; Board Member, RadSite ; Former Officer, HealthHelp, LLC

LEARNING OBJECTIVES

View learning objectives under main course title.

ISP: Health Service, Policy and Research (Medical/Practice Management)

Wednesday, Dec. 2 3:00PM - 4:00PM Location: S102D



AMA PRA Category 1 Credit™: 1.00
ARRT Category A+ Credit: 1.00

Participants

James V. Rawson, MD, Augusta, GA (*Moderator*) Nothing to Disclose
Paul P. Cronin, MD, MS, Ann Arbor, MI (*Moderator*) Nothing to Disclose

Sub-Events**SSM12-01 Health Service, Policy and Research Keynote Speaker: Medical/Practice Management**

Wednesday, Dec. 2 3:00PM - 3:10PM Location: S102D

Participants

James V. Rawson, MD, Augusta, GA (*Presenter*) Nothing to Disclose

SSM12-02 Using Modality Log Files to Guide MR Protocol Optimization and Improve Departmental Efficiency

Wednesday, Dec. 2 3:10PM - 3:20PM Location: S102D

Participants

Martin L. Gunn, MBChB, Seattle, WA (*Presenter*) Research support, Koninklijke Philips NV; Spouse, Consultant, Wolters Kluwer NV; Medical Advisor, TransformativeMed, Inc;
Bruce E. Lehnert, MD, Seattle, WA (*Abstract Co-Author*) Research support, Koninklijke Philips NV
Jeffrey H. Maki, MD, PhD, Seattle, WA (*Abstract Co-Author*) Research support, Bracco Group; Speakers Bureau, Lantheus Medical Imaging, Inc;
Christopher Hall, PhD, Briarcliff Manor, NY (*Abstract Co-Author*) Employee, Koninklijke Philips NV
Thomas Anthor, Hamburg, Germany (*Abstract Co-Author*) Employee, Koninklijke Philips NV
Julien Senegas, Hamburg, Germany (*Abstract Co-Author*) Employee, Koninklijke Philips NV
Norman J. Beauchamp JR, MD, Seattle, WA (*Abstract Co-Author*) Research Grant, Koninklijke Philips NV

PURPOSE

Imaging equipment log files contain detailed data about workflow and equipment utilization that is unavailable on RIS and PACS sources. The purpose of this study was to investigate the use of log files to identify areas of waste based on scanner time, variability and number of sequences, and measure the impact of a departmental MR efficiency process.

METHOD AND MATERIALS

Log files (MRLFs) were extracted from 4 MR scanners from 07/2013 to 02/2015 and were parsed to extract several parameters (e.g. protocol, sequences, exam duration, idle time, table movement). Using RIS data and MRLFs, we identified protocols with the greatest volume, duration and variation. Using MRLFs, we monitored system utilization of liver mass (MRLiv) and abdo/pelvis survey (MRAP) protocols pre and post protocol optimization. Optimization included assigning MRLiv patients with cirrhosis undergoing HCC screening to a new abbreviated protocol (MRLivCirr), and sequence reduction and optimization (MRAP). Statistical comparisons included a 2 tailed T-test and F-test.

RESULTS

Mean monthly MRLiv patient volume (+/- s.d.) was 55 ± 16 before and 20 ± 1 after optimization. The remaining 38 +/- 18 patients/month were for HCC screening and were assigned to the new MRLivCirr protocol. Mean monthly MRAP exams before was 20.6 ± 7.3 and after was 17.6 ± 2.3. Exam duration (table time ± s.d.) for MRLiv patients was 30.9 ± 9.3 min before and 31.4 ± 11.7 min after (p=0.7). However, for patients in the new MRLivCirr protocol group, mean time reduced by 7.2 min/exam to 23.7 ± 7.9 min (p<0.001). Duration for patients undergoing MRAP reduced from 52.9 ± 16.6 min to 43.1 ± 15.6 min, saving 9.8 min/exam (p<0.001). At an estimated rate of \$650/hr, potential yearly savings could reach \$36k for cirrhosis screening, and \$22k for MRAP patients. The predictability of the exam length was improved with the s.d. of the MRLivCirr group (7.9 min) lower than the MRLiv group (11.7 min); F-Test, p<0.02.

CONCLUSION

MRLFs can be used to identify opportunities for equipment utilization improvement and measure the impact with accuracy. During our process we were able measure exact time savings and decreased variability per patient.

CLINICAL RELEVANCE/APPLICATION

Log files provide a way to measure modality utilization during image acquisition that are unavailable from RIS and PACS sources. They can be used to evaluate operational improvements in the department, potentially saving cost, and improving patient satisfaction.

SSM12-03 Comparison between Tumor Evaluation Using Free-text and RECIST 1.1 Criteria in Everyday Work

Wednesday, Dec. 2 3:20PM - 3:30PM Location: S102D

Participants

Juliane Schelhorn, MD, Essen, Germany (*Abstract Co-Author*) Nothing to Disclose
Julia Hoischen, Duesseldorf, Germany (*Abstract Co-Author*) Nothing to Disclose
Haemi P. Schemuth, Essen, Germany (*Presenter*) Nothing to Disclose
Elena Stenzel, Essen, Germany (*Abstract Co-Author*) Nothing to Disclose

Felix Nensa, MD, Essen, Germany (*Abstract Co-Author*) Nothing to Disclose
Kai Nassenstein, Essen, Germany (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Different criteria have been established to improve and standardize tumor response evaluation. Currently, these criteria are used in clinical trials, but are rarely employed in daily work. This retrospective study compared tumor response evaluation by free-text and RECIST 1.1 criteria in everyday tumor patients.

RESULTS

Main included tumor entities were lung (17%), colorectal (16%), and breast cancer (14%). Median time intervals between CT follow-ups were 9-12 weeks. At first follow-up, 51% of patients were rated with different response categories comparing free-text and RECIST 1.1. This was significant ($p < 0.001$) with an obvious underrepresentation of SD and an overrepresentation of PR and PD in free-text evaluation. At second follow-up, 46% had categorical differences, which was significant ($p < 0.003$). At the later follow-ups, categorical differences were obvious, but not significant (3. follow-up: 42% differences, $p = 0.570$; 4. follow-up: 35%, $p = 0.824$; 5. follow-up: 47%, $p = 0.209$). The severity of categorical differences increased with increasing follow-up time (up to a difference of three response categories) due to different reference points used for image analysis.

CONCLUSION

Severe differences in tumor response evaluation were detected comparing evaluation by free-text and RECIST 1.1. Given this, tumor response criteria should be implemented in the daily routine.

CLINICAL RELEVANCE/APPLICATION

To improve routine tumor patient monitoring tumor response criteria should be used in everyday work.

SSM12-04 Implementing a Collaborative Approach to Imaging Utilization Management at a Provider-Owned Managed Services Organization

Wednesday, Dec. 2 3:30PM - 3:40PM Location: S102D

Participants

Daniel Durand, MD, Baltimore, MD (*Presenter*) Stockholder, Evolent Health, LLC; Advisor, National Decision Support Company; Advisor, Radiology Response; Founder, am-I-ok.com
Craig Reich, MD, Oakland, CA (*Abstract Co-Author*) Nothing to Disclose
Jeffrey D. Robinson, MD, MBA, Seattle, WA (*Abstract Co-Author*) Consultant, HealthHelp, LLC; President, Clear Review, Inc;
David B. Larson, MD, MBA, Los Altos, CA (*Abstract Co-Author*) Intellectual property license agreement, Bayer AG; Potential royalties, Bayer AG
Richard Sankary, MD, Oakland, CA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

While effective at controlling utilization, radiology benefit managers (RBMs) are disliked because they require ordering physicians to demonstrate medical necessity to an imaging gatekeeper who is not part of the community in which care occurs. Provider-owned health plans often utilize RBMs because their non-radiologist Medical Directors (MDs) are not imaging specialists. The purpose of our study was to demonstrate that radiologists can train local MDs to be effective stewards of imaging using collaborative techniques and produce results on par with RBMs but with fewer denials.

METHOD AND MATERIALS

A provider-owned Managed Services Organization (MSO) underwent an imaging utilization management (UM) process redesign. Prior to 2015, only PET/CTs and MRI exams ordered by primary care physicians were reviewed. After 1/1/15, all requests for CT, MRI, PET/CT, nuclear cardiology, and echocardiography were reviewed using Milliman Care Guidelines. The UM MD staff attended a day-long workshop led by two radiologists expert in collaborative imaging stewardship. The peer-to-peer process was rescripted to emphasize the risks of imaging (e.g. radiation) and suggesting alternative management plans (e.g. alternative imaging modalities) when appropriate. To assess the efficacy of the intervention, the MSO pre-authorization database was queried for the intervention period (Q1 2015) and a seasonally-matched baseline period (Q1 2014). The data elements extracted are shown in Figure 1. Impact rate was defined as the percentage of cases modified, withdrawn, or denied.

RESULTS

There was a significant increase in impact rate (0.4% vs. 4.6%, $p = 0.005$) during the intervention period versus the control period. The number of requests modified or withdrawn by the ordering physician increased significantly (0.4% vs. 3.8%, $p = 0.01$), while the number of requests denied by MDs was not significantly different (0.0% vs. 0.6%, $p = 0.51$). Overall, the number of studies authorized per 1,000 patients declined significantly after the intervention (96.8 vs. 89.0, $p = 0.006$).

CONCLUSION

Local MDs trained by radiologists can be effective stewards of imaging by using collaborative techniques that significantly reduce unnecessary imaging utilization without significantly increasing the use of denials.

CLINICAL RELEVANCE/APPLICATION

Radiologists can create significant value for health systems by training local MDs to be effective stewards of imaging UM using collaborative techniques.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

David B. Larson, MD, MBA - 2014 Honored Educator

SSM12-05 Has Use of Prostate Biopsy and Transrectal Ultrasound Declined as Concerns Mount about Overdiagnosis of Prostate Cancer?

Wednesday, Dec. 2 3:40PM - 3:50PM Location: S102D

Participants

David C. Levin, MD, Philadelphia, PA (*Presenter*) Consultant, HealthHelp, LLC; Board of Directors, Outpatient Imaging Affiliates, LLC
Laurence Parker, PhD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose
Ethan J. Halpern, MD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose
Vijay M. Rao, MD, Philadelphia, PA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

In recent years there has been considerable debate about the issue of overdiagnosing prostate cancer (PCa). Since it is often an indolent disease and the potential harms from diagnosis and treatment are considerable, some have advocated a more conservative approach to conducting screening and diagnostic procedures. For example, the U.S. Preventive Services Task Force has issued a grade D recommendation against PSA-based screening. Our purpose was to study trends in the use of prostate biopsy (PB) and transrectal ultrasound (TRUS) over a recent 13-year period.

METHOD AND MATERIALS

The nationwide Medicare Part B Physician/Supplier Procedure Summary Master Files for 2001 through 2013 were used. They cover all Medicare fee-for-service beneficiaries (17.2 million males in 2013). CPT codes for PB and TRUS were selected and trends in procedure volume were evaluated. Utilization rates per 1000 males were calculated. Medicare specialty codes were used to identify the specialty of the physicians performing the procedures.

RESULTS

PB volume peaked in 2002, when a total of 292,045 were performed in Medicare patients. A generally downward trend then followed in subsequent years, reaching 165,382 in 2013 (-43%). The rate of PBs per 1000 male Medicare beneficiaries was 17.4 in 2002, decreasing to 9.6 in 2013. In that last year, urologists performed 87% of the biopsies, while radiologists performed 0.6%. Most of the rest were done in independent diagnostic testing facilities, in which the provider specialty could not be determined. TRUS volume peaked in 2006 at 318,518, then declined in subsequent years to 214,980 in 2013 (-33%). In that last year, urologists performed 90% of TRUSs, while radiologists performed 4%. The remaining 6% were performed by physicians in various other specialties.

CONCLUSION

The use of both PB and TRUS has declined substantially in recent years. This appears to reflect a more conservative approach to screening for PCa, which in turn has resulted from the extensive debate about the risks, costs, and benefits of identifying and treating the disease.

CLINICAL RELEVANCE/APPLICATION

Physicians are now performing fewer procedures relating to prostate cancer diagnosis.

SSM12-06 Calmative Training of MR Imaging Support Staff Improving Study Completion Rates and Patient Show-Up Rates

Wednesday, Dec. 2 3:50PM - 4:00PM Location: S102D

Participants

Alexander M. Norbash, MD, Boston, MA (*Presenter*) Co-founder, Boston Imaging Core Laboratories, LLC;
William T. Yuh, MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose
E. Kent Yucel, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Elvira V. Lang, MD, Brookline, MA (*Abstract Co-Author*) Founder and President, Hypnalgescics, LLC;
Stephen Pauker, MD, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Amna A. Ajam, MBBS, Little Rock, AR (*Abstract Co-Author*) Nothing to Disclose
Gheorghe Doros, Boston, MA (*Abstract Co-Author*) Nothing to Disclose
Nina A. Mayr, MD, Seattle, WA (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

The throughput efficiency of high cost imaging services such as Magnetic Resonance Imaging (MRI) has major impact to the financial status of the imaging service, particularly given decreasing overall diminishing healthcare margins. We evaluated whether a simple and inexpensive calmative training to the imaging staff team as a cost-effective way to improve the throughput and impact the financial bottom line.

METHOD AND MATERIALS

A total of 97,712 patient visits from 3 tertiary academic medical centers participated, including 49,733 visits during one-year period prior to the calmative training and 47,979 one-year after training. The center's MRI teams received calmative skill training with advanced communication and calmative techniques through onsite proctoring, and additional education using case-based simulations with scenarios requiring calmative interventions and utilizing electronic educational tools. The study's incompleteness rate and patient no-show rate during-year intervals before and after training were compared using two-sided chi-square tests for proportions at a 0.05 significance level.

RESULTS

Despite variations in the patient population at the different sites with differing baseline no-show rates (ranged 5-19.4%) and study incompleteness rates (ranged 0.8-6.9%) prior to training, the combined patients data showed significant ($p < 0.0001$) improvement of patient throughput with calmative training. Based upon the one-year data intervals compared before and after training, no-show rates decreased from 11.2% to 8.7% and incompleteness rates decreased from 2.3 to 1.4% for all show-up patients. Additionally, increasingly lengthy and complex studies such as cardiac, whole body, or combined imaging studies were performed without an increase in no-show or incompleteness rates following calmative training.

CONCLUSION

The results suggest that calmative training of the imaging support staff can significantly improve the no-show and incompleteness rates of the MRI service, thereby improving the throughput and utilization of high-value and expensive imaging modalities such as MRI which happens to have offputting physical features including noise and a constrained bore.

CLINICAL RELEVANCE/APPLICATION

Calmative training of supportive staff can significantly improve the no-show and incompleteness rates of the MRI service, improving throughput and resource use without added capital budget investment.

MSES51

Essentials of Non-interpretative Skills

Thursday, Dec. 3 8:30AM - 10:00AM Location: S406B



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Sub-Events

MSES51A How a Dictation Becomes a Dollar

Participants

Ezequiel Silva III, MD, San Antonio, TX, (zekesilva3@gmail.com) (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Gain an understanding of each step in the payment process including diagnosis and procedural coding, as well as valuation. 2) Apply these concepts to future alternative payment models. 3) Explore financial performance indicators for billing entities and how these indicators are used to evaluate our internal and external billing processes. 4) Discuss questions which these concepts should prompt when pursuing new practice opportunities.

ABSTRACT

The ability to navigate future payment models will require basic knowledge of the manner in which radiology services are paid within current systems. This session will take the participant through every step in the payment process and focus on how each element of the interpretive dictation impacts the payment process. Focus will be given to diagnosis and procedural coding and how that translates to medical necessity and eventual valuation. An introduction to alternative payment models will follow and the session will close with a glimpse at financial performance indicators every radiologists should understand.

Handout:Ezequiel Silva

[http://abstract.rsna.org/uploads/2015/15001830/Dictation to Dollar notes.docx](http://abstract.rsna.org/uploads/2015/15001830/Dictation%20to%20Dollar%20notes.docx)

MSES51B Radiologist Value Based Payments: Myth or Reality?

Participants

Giles W. Boland, MD, Boston, MA (*Presenter*) Principal, Radiology Consulting Group; Royalties, Reed Elsevier

LEARNING OBJECTIVES

1) To understand the changing payment landscape and how it could impact radiology revenue streams. Quality, safety and patient experience factors will likely factor into value based payments. This section will focus on the impending transformation that will be likely occur and what strategies radiologists can employ to take advantage.

ABSTRACT

MSES51C Fundamentals of CT Data Acquisition

Participants

Sandra S. Halliburton, PhD, Highland Heights, OH, (sandra.halliburton@philips.com) (*Presenter*) Employee, Koninklijke Philips NV

LEARNING OBJECTIVES

1) Identify the basic hardware components of a CT scanner. 2) Understand the standard methods for acquiring CT data. 3) Describe important user-defined parameters for data acquisition. 4) Select appropriate data acquisition parameters based on patient characteristics and clinical indication.

MSES51D Radiology Malpractice: Pitfalls to Avoid

Participants

Richard Duszak JR, MD, Atlanta, GA, (richard.duszak@emory.edu) (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Articulate the four criteria necessary for a successful malpractice lawsuit. 2) Outline factors contributing to a "missed" imaging diagnosis. 3) Describe opportunities to enhance communication with referring physicians and patients so as to improve care and minimize malpractice exposure.

RC627

Challenges in Imaging Economics: Perspectives from Three Nations: Canada, UK and USA

Thursday, Dec. 3 8:30AM - 10:00AM Location: S404CD

HP

AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Frank J. Lexa, MD, Philadelphia, PA (*Coordinator*) Nothing to Disclose

Frank J. Lexa, MD, Philadelphia, PA (*Moderator*) Nothing to Disclose

Geraldine B. McGinty, MD,MBA, New York, NY (*Presenter*) Nothing to Disclose

Bruce B. Forster, MD, Vancouver, BC (*Presenter*) Travel support, Siemens AG; Travel support, Toshiba Corporation;

Erika R. Denton, MBBS, Norwich, United Kingdom (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Examine the drivers of change in radiology in three nations. 2) Compare and contrast the challenges that radiology faces globally. 3) Understand how organized radiology is adapting to a rapidly changing societal landscape for its services. 4) Analyze best practices for handling the challenges that we all face.

ABSTRACT

Radiologists in many parts of the globe are experiencing rapid changes in the way that they practice their specialty. The drivers of change and the challenges that they create are legion. In this session, we will have distinguished speakers from three nations discuss the challenges that organized radiology faces in their home countries and how they have tried to adapt in these circumstances. The topics will include a wide ranging array of strategic considerations including but not limited to: aging patient populations, rising demand for healthcare, changing government regulation, methods of payment in the public (and where appropriate the private) sector, regulatory issues, radiologist workforce issues and the training of the next generation of radiologists. The session will encompass both presentations and a panel discussion which will be informative and provocative

RC632

Value-Added Initiatives for a Healthcare System

Thursday, Dec. 3 8:30AM - 10:00AM Location: S104A



AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

Sub-Events

RC632A Value Creation in Radiology: Beyond the Total Value Equation

Participants

Richard E. Heller III, MD, Chicago, IL (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) Understand the difference between interpretive value and non-interpretive value and the concept of the Total Value Equation. 2) Understand how to illustrate where on the Operations Frontier Curve your practice or department wishes to place itself, and where you think you actually are. 3) Based on the above two objectives, be able to identify potential areas of improvement in your staffing model. (This course is part of the Leadership Track)

ABSTRACT

The term 'value' is popular in health care, and while universally understood to be critical to success, it is also a concept that is complex and can be challenging to evaluate. This talk analyzes the idea of value and value creation in the radiology department, and uses the Total Value Equation as a framework to deconstruct the activities of the department into interpretive and non-interpretive. By understanding these ideas, the radiology practice leader is better able to manage their resources and maximize their value production.

RC632B Imaging Informatics

Participants

Keith J. Dreyer, MD, PhD, Boston, MA (*Presenter*) Co-Chairman, Medical Advisory Board, Merge/IBM

LEARNING OBJECTIVES

1) Develop an understanding of the essential Informatics skills required for a leader to be successful. 2) Develop an understanding of the common Informatics errors made by leaders in academic and private practices. 3) Acquire the skills of Informatics planning needed to ensure that the success of your organization is sustainable over time. (This course is part of the Leadership Track)

Health Service, Policy and Research Thursday Poster Discussions

Thursday, Dec. 3 12:15PM - 12:45PM Location: HP Community, Learning Center



AMA PRA Category 1 Credit™: .50

ParticipantsPaul P. Cronin, MD, MS, Ann Arbor, MI (*Moderator*) Nothing to DiscloseChristopher P. Hess, MD, PhD, Mill Valley, CA (*Moderator*) Research Grant, General Electric Company; Research Grant, Quest Diagnostics Incorporated; Research Grant, Cerebrotech Medical Systems, Inc;**Sub-Events****HP238-SD-THA3 Characteristics and Trends of Radiology Research in China: A Survey of Original Articles Published in Chinese Journal of Radiology between 2001 and 2010**

Station #3

ParticipantsXiaohu Li, MD, Hefei, China (*Presenter*) Nothing to DiscloseYongqiang Yu, MD, Hefei, China (*Abstract Co-Author*) Nothing to Disclose**PURPOSE**

To determine the characteristics and trends of the original articles published in Chinese Journal of Radiology, between 2001 and 2010

METHOD AND MATERIALS

All 2378 original articles published in Chinese Journal of Radiology between 2001 and 2010 were evaluated. The following information was abstracted from each article: radiologic subspecialty, radiologic technique used, type of research, sample size, study design, statistical analysis, study outcome, declared funding, number of authors, affiliation of the first author, and province of the first author. In addition, all the variables examined were presented along with the trend over time

RESULTS

The most common subspecialty of study was neuroradiology 403 of 2378,16.9%), followed by vascular/interventional (369 of 2378,15.5%). And Abdominal (331of 2378,13.9%) .A total of 834 (35.1%) original articles used magnetic resonance (MR) imaging or 678 (28.5%) computed tomography (CT), 2034 (85.5%) were clinical research articles, 819 (34.4%) had sample size of between 20 and 50 , 1838 (77.3%) were retrospective, 1309 (55%) performed statistical analysis, 2337 (98.3%) showed positive study outcome, 1744 (77.3%) were not funded, 1529 (64.3%) had four to seven authors, and 2283 (96%) were written by the primary author who was from a department of radiology or radiology-related specialties. The province published Beijing (663,27.9%),Guangzhou(349,14.7%),Shanghai(281,11.8%).. In the time trend analysis, the following variables showed a significantly positive trend: Breast subspecialty, MR imaging as the radiologic techniques, type of research as other (nonbasic, nonclinical), sample size of more than 50, more than seven as the number of authors, Jiangsu,fujian ad xinjiang as province of the first author. On the other hand,vascular/interventional subspecialty, showed a significantly negative trend

CONCLUSION

The bibliometric analysis of the Chinese Journal of Radiology journal with articles published between 2001 and 2010 revealed characteristics and trends of the current radiology research that may provide useful information to researchers and editorial staff in radiology

CLINICAL RELEVANCE/APPLICATION

Characteristics and Trends of Radiology Research in China

Health Service, Policy and Research Thursday Poster Discussions

Thursday, Dec. 3 12:45PM - 1:15PM Location: HP Community, Learning Center

HP

AMA PRA Category 1 Credit™: .50

Participants

Paul P. Cronin, MD, MS, Ann Arbor, MI (*Moderator*) Nothing to Disclose
 Christopher P. Hess, MD, PhD, Mill Valley, CA (*Moderator*) Research Grant, General Electric Company; Research Grant, Quest Diagnostics Incorporated; Research Grant, Cerebrotech Medical Systems, Inc;

Sub-Events**HP239-SD- Influencing Factors and Radiological Medical Utilizations among Elderly Inpatients**
THB1

Station #1

Participants

Yi-Fen Wang, MD, Taichung, Taiwan (*Presenter*) Nothing to Disclose
 Mei-Wen Lee, Taichung, Taiwan (*Abstract Co-Author*) Nothing to Disclose
 Chin-Tun Hung, Taichung City, Taiwan (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Population ageing may increase utilization of diagnostic imaging because of the burden of disease in older people. The purpose of this study is to evaluate the diagnostic imaging utilization in elderly inpatients and identify the influence factors.

METHOD AND MATERIALS

From database comprised of inpatients chosen from the National Health Insurance Research Database in 2010, all inpatients aged 65+ were included. Two groups of elderly inpatients including once hospitalized and greater than or equal to twice hospitalized were analyzed. Diagnostic images include chest X-ray, abdomen X-ray, other X-ray, computed tomography (CT), and magnetic resonance imaging (MRI).

RESULTS

In elderly inpatients aged 65+, once hospitalized is 62.4%, and greater than or equal to twice hospitalized is 37.6%. The proportions of diagnostic imaging used during hospitalization of two groups are 61.8% and 90.8%. There are significant differences in the use of diagnostic imaging ($p < 0.001$), increasing at advancing age, male, public hospitals, hemorrhagic stroke and ischemic stroke.

CONCLUSION

Population ageing will increase demand for diagnostic imaging. Stroke can cause disability, not only increasing the demand for long-term care, radiology medical utilization also increased. In reining the growth of expenditure, the insurance system will bring great challenges to the diagnostic radiology department. Ageing and stroke should be particularly wary. Health policies should emphasize prevention of disease, and make people healthier aging.

CLINICAL RELEVANCE/APPLICATION

There are significant differences in the use of diagnostic imaging ($p < 0.001$), increasing at advancing age, male, public hospitals, hemorrhagic stroke and ischemic stroke.

HP240-SD- Global Health Imaging Curriculum: What Do Radiology Residents Want?
THB2

Station #2

Participants

Rebecca Zener, MD, London, ON (*Presenter*) Nothing to Disclose
 Ian G. Ross, MD, London, ON (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

Radiology residents in North America are motivated to gain global health imaging (GHI) experience; however, they feel ill-prepared based with the current training model. The purpose is: i) to determine the Canadian radiology resident perspective on the benefits of and the current barriers to pursuing international GHI experiences; and ii) how to create an ideal GHI curriculum.

METHOD AND MATERIALS

A peer-reviewed, online, anonymous multiple-choice survey was distributed to Canadian radiology residents.

RESULTS

50 residents responded. 79% believed that an international radiology rotation in a developing country was integral to the creation of a GHI curriculum. A majority (83%) were interested in a GHI experience in diagnostic radiology, while a minority were interested in an IR related GHI experience (39%), and GHI research (29%). The preferred international rotation duration was 2-4 weeks. Residents stated that an international GHI rotation would be most relevant for the following CanMEDS roles: health advocate (97%), collaborator (92%), medical expert and communicator (both 87%), and manager (81%). The most important barriers inhibiting residents from pursuing international GHI experiences included a lack of information about opportunities, a lack of funding, and a lack of infrastructure. Other preferred approaches to a GHI curriculum included case presentations/grand rounds focused on diseases prevalent in the developing world (66%), and performing international teleradiology (59%). Residents believed that a GHI curriculum would increase their knowledge of infectious diseases, expose them to diseases at advanced stage at presentation,

enhance their knowledge of basic imaging modalities, and improve their cultural competence.

CONCLUSION

Radiology residents view an international radiology rotation in a developing country as an integral component to any GHI curriculum. They believe it would be most relevant to developing their health advocate, and collaborator competencies. Lack of knowledge regarding available opportunities, funding and infrastructure are the most important barriers inhibiting residents from pursuing international radiology rotations.

CLINICAL RELEVANCE/APPLICATION

Radiology residents perceive an international radiology rotation in the developing world as a integral component to the development of a global health imaging curriculum for radiology residency.

HP241-SD- THB3 Analysis of Partial Original Papers using CT in the Diagnosis of Cardiovascular Disease from 2008 to 2013 in China

Station #3

Participants

Xiaohu Li, MD, Hefei, China (*Presenter*) Nothing to Disclose

Yongqiang Yu, MD, Hefei, China (*Abstract Co-Author*) Nothing to Disclose

PURPOSE

To determine the characteristics cardiovascular CT imaging original articles published in Chinese Journal of Radiology and Chinese Journal of Cardiology , between 2008 and 2013 in China

METHOD AND MATERIALS

85 cardiovascular CT imaging original articles published in Chinese Journal of Radiology and 20 cardiovascular CT imaging original articles published in Chinese Journal of Cardiology between 2008 and 2013 were evaluated. The following information was abstracted from each article: type of research, Type of study, Research methods ,sample size, study design, statistical analysis, declared funding, CT device type, Cardiovascular disease classification, The methods of low-dose.

RESULTS

105 cardiovascular CT imaging original articles published during 5 years (85 CJR, 20 CJC), clinical articles 84 (80%), coronary heart disease study 71 (68%), congenital heart disease, 12 (11%), cardiovascular low-dose 41 (39%), of which prospective ECG triggering axis sweep 17 (41%), the number of cases has more than 50 cases of 61 (58%), a retrospective study 63 (60%), 87 articles (83%) have used statistical methods, 28 (27%) article is funded projects on the CT50 row after 64 articles (48%) 64 row CT45 articles (43%)

CONCLUSION

The bibliometric analysis of the Chinese Journal of Radiology and the Chinese Journal of Cardiology with cardiovascular CT imaging original articles published between 2008 and 2013 revealed characteristics which may provide useful information to cardiovascular CT imaging researchers and editorial staff in radiology or cardiology.

CLINICAL RELEVANCE/APPLICATION

The bibliometric analysis of the Chinese Journal of Radiology and the Chinese Journal of Cardiology with cardiovascular CT imaging original articles can provide useful information to cardiovascular CT imaging researchers and editorial staff in radiology or cardiology

RC716

Radiological and Nuclear Terrorism: Like It or Not, Radiology Professionals Will Be in the 'Hot' Seat

Thursday, Dec. 3 4:30PM - 6:00PM Location: S103AB

HP OT

AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

FDA Discussions may include off-label uses.

Participants

Donald P. Frush, MD, Durham, NC (*Moderator*) Nothing to Disclose
John Lanza, MD, Pensacola, FL, (JohnJ.Lanza@FLHealth.gov) (*Presenter*) Nothing to Disclose
Nick Dainiak, MD, Oak Ridge, TN, (Nick.Dainiak@orau.org) (*Presenter*) Nothing to Disclose
Judith L. Bader, MD, Bethesda, MD (*Presenter*) Nothing to Disclose

LEARNING OBJECTIVES

1) To describe the scenarios for an radiological dispersal device (RDD) or improvised nuclear device (IND). 2) To discuss roles of federal, state, and local governments. 3) To review the roles and strategies of hospital teams, including radiology professionals in the setting of an RDD/IND. 4) To provide resources for radiology professionals for response in the setting of RDD/IND. 5) Describe the very large mass casualty scenarios of concern that radiologists might be called to help with. 6) Understand is the difference between radiation contamination and exposure. 7) Understand the clinical strategies used to manage contamination and exposure. 8) Identify internet resources physicians can use to inform themselves about preparing for and participating in responses to these types of incidents.

ABSTRACT

URL

http://escambia.floridahealth.gov/programs-and-services/emergency-preparedness-and-response/_documents/rsna-radiological-professional-ppt.pptx

The Future of Radiology Payments: Can Analytics Help Radiologists Regain Control?

Thursday, Dec. 3 4:30PM - 6:00PM Location: N226

HP

AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credits: 1.50

Participants

David A. Rosman, MD, Boston, MA (*Coordinator*) Nothing to Disclose

David A. Rosman, MD, Boston, MA (*Moderator*) Nothing to Disclose

Danny Hughes, PhD, Reston, VA, (dhughes@neimanhpi.org) (*Presenter*) Nothing to Disclose

Woojin Kim, MD, Philadelphia, PA, (woojinrad@gmail.com) (*Presenter*) Co-founder, Montage Healthcare Solutions, Inc; Shareholder, Montage Healthcare Solutions, Inc; Board of Directors, Montage Healthcare Solutions, Inc; Advisory Board, Zebra Medical Vision Ltd

LEARNING OBJECTIVES

1) Understand how analytics can help radiologists provide value over volume and get compensated for it. 2) Understand how big data and analytics can be made accessible to the practicing radiologist. 3) Better understand radiology's place in the economic puzzle of bundles. 4) Understand how analytics can make the radiologists report more accurate and easier to produce. 5) Understand how a department powered by analytics can enhance quality and payment.

ABSTRACT

As healthcare delivery models evolve into ones that reward value over volume, the mechanisms by which physicians and facilities will be compensated will change. To date, there is little consensus on how radiologists and radiology departments will be addressed under new payment models. This program is intended for radiologists at all stages of their careers and in various leadership and management roles, and is intended to demonstrate the power of historical analytic data in forming the baseline for innovative local and national payment models that will align stakeholder interests. It is also aimed at the more day to day practical side of analytics explaining how they can help create more consistent and accurate reports while simultaneously enhancing payment. Increasingly, practice leaders will be required to establish contracts based on risk and value. Given the seeming lack of information regarding new payment models and how they are actually implemented, it is easy for radiologists to feel hopeless or powerless against the oncoming tide of change. This program will show that, using data and analytics, radiology and radiologists can regain control of their financial stake in the patient encounter. Although "Big Data" and "Analytics" may sound like something that cannot affect your day to day practice as a radiologists, it turns out that having powerful tools work in the background can allow for better, more consistent reports, better communication of critical results and followup and can allow for a more proactive rather than reactive radiology practice.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Woojin Kim, MD - 2012 Honored Educator

RC827

Comparative Effectiveness: New Research Agendas for New Economic Times

Friday, Dec. 4 8:30AM - 10:00AM Location: S501ABC

HP

AMA PRA Category 1 Credits™: 1.50
ARRT Category A+ Credit: 0

Participants

Ruth C. Carlos, MD, MS, Ann Arbor, MI (*Coordinator*) Nothing to Disclose

Ruth C. Carlos, MD, MS, Ann Arbor, MI (*Moderator*) Nothing to Disclose

Mitchell D. Schnall, MD, PhD, Philadelphia, PA (*Presenter*) Nothing to Disclose

Jeffrey G. Jarvik, MD, MPH, Seattle, WA (*Presenter*) Co-founder, PhysioSonics, Inc; Stockholder, PhysioSonics, Inc; Intellectual property, PhysioSonics, Inc ; Consultant, HealthHelp, LLC; Author, Springer Science+Business Media Deutschland GmbH; Advisory Board, General Electric Company; Consultant, Alphabet Inc

Larry G. Kessler, Seattle, WA (*Presenter*) Consultant, Nucleix, Ltd; Consultant, MagForce AG

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: <https://www.rsna.org/Honored-Educator-Award/>

Mitchell D. Schnall, MD, PhD - 2013 Honored Educator