Image Interpretation Exhibit

**LL-EDE3016**

**Moderator**
- **Gerald D Dodd**, MD *

**Panel**
- **David A Lynch**, MBBCch *
- **Riccardo Manfredi**, MD *
- **Debra L Monticciolo**, MD *
- **Michael J Tuite**, MD *
- **David M Yousem**, MD *

**Purpose/Aim**
Moderator G. D. Dodd, MD Panelists:
- D.P. Frush, MD
- D.A. Lynch, MBBCch
- R. Manfredi, MD
- D.L. Monticciolo, MD
- M.J. Tuite, MD
- D.M. Yousem, MD

This is the companion electronic exhibit to the Image Interpretation Session, scheduled for Sunday, December 1, 4:00 - 5:45 pm, in Arie Crown Theater. Several of the case histories to be discussed in the Sunday session will be on display electronically beginning Sunday at 8:00 am. After the session concludes, the accompanying discussion for each case will be revealed. The exhibit will remain on display for self-study until 12:30 pm, Friday, December 6. The learning objectives for this presentation are: 1) Identify key abnormal findings on radiologic studies that are critical to making a specific diagnosis. 2) Construct a logical list of differential diagnoses based on the radiologic findings, focusing on the most probable differential diagnoses. 3) Determine which, if any, additional radiologic studies or procedures are needed in order to make a specific final diagnosis. 4) Choose the most likely diagnosis based on the clinical and the radiologic information.
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### RSNA Posters-Printed or Digital? Help Influence the FUTURE!

**LL-EDE3017**
- William J Weadock, MD *
- Sarah C Abate, BS
- Isaac R Francis, MD

**PURPOSE/AIM**
On behalf of the RSNA Radiology Informatics Committee, Dr. William Weadock of the University of Michigan School of Medicine will conduct a survey of attendee preferences regarding potential innovations in the presentation format of education exhibits and scientific posters. The survey area, located in the Lakeside Learning Center, Level 3, Hall D, will be used to gather feedback from attendees on a number of potential innovations to the traditional poster format including multimedia enhancements.

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Paranasal Sinuses—chest—abdomen MDCT: Findings in the Adult Neutropenic Febrile Patient—Is It a Justifiable Exposure?

LL-MSE1201
Laura E Gonzalez Lozada, MD
Mariana Diaz-Zamudio, MD
Anamari Perochena, MD
Carlos Juarez, MD
Marco A Teliz, MD

PURPOSE/AIM
To describe common and uncommon findings of Computed Tomography (CT) scans in adult neutropenic febrile patients.
To review evidence from literature of rationale of CT scans in this group of patients.
To describe infectious findings in CT studies of paranasal sinuses, thorax and abdomen in neutropenic febrile patients from our institution.

CONTENT ORGANIZATION
2. Evidence from literature of rationale of CT scans in neutropenic febrile patients
3. Data from our institution: Findings of CT scans performed to 500 adult neutropenic febrile patients admitted to the emergency room

SUMMARY

DECT: New Dimensions in Clinical Oncologic Imaging

LL-MSE1202
Todd W Cramer, MD, MPH
Wendy L Stiles, MD
Alvin C Silva, MD
Amy K Hara, MD *
Robert G Paden
William Pavlicek, PhD
J. Ross Mitchell, PhD *

PURPOSE/AIM
• Review evolving role of DECT, as applicable in body oncology
• Illustrate how DECT aids in evaluating oncology patients by applying various imaging displays and advanced post-processing techniques, allowing improved differentiation and quantification of materials in tumors
• Discuss pitfalls and limitations of DECT technique
Review body oncology applications of DECT including, but not limited to: lung, liver, adrenal, kidney, pancreas, bowel, and tumor treatment response. Distinguish lesions with material basis pairs, and by directly measuring iodine density or employing effective Z. Improve diagnostic accuracy with post-processed DECT series, such as spectral HU curves, iodine basis pair with color overlay, scatter plots, and histograms. Show how to use different combinations of DECT displays to attain more confident lesion evaluation. Furthermore, pitfalls and limitations of DECT technique will be considered, including lack of standardized window/level, material spectral separation, and confounding related to iodine-containing therapy and calcium.

SUMMARY
For oncologic imaging, DECT is at the precipice of a fundamental conceptual change in CT image evaluation with great potential for more accurate tumor staging and assessment of treatment response.

An iPad Application Designed for Self Paced Learning in Body CT: The Lecture Series

PURPOSE/AIM
this application shows the advantage of a mobile devise like the iPad in the educational arena by demonstrating how it can be used to store, distribute and deliver a series of lectures focusing on Computed Body Tomography. The user will get a better feel how new technology can help improve the education experience

CONTENT ORGANIZATION
The program will be an easy to use iPad based application that follow the classic Apple iPad users guidelines. The guidelines allow for the user with no formal instruction to be able to quickly manage the software and begin their learning experience. A series of over 300 lectures in 18 topic categories is available to the user.

SUMMARY
the user will better understand how new technologies like a mobile iPad can provide a unique educational experience to the user without the need for any formal training. The program that can be viewed in any order the user selects, gives you the user a feel of how the future of education is in fact going.

Straddling across Boundaries - Thoraco-abdominal Lesions: Spectrum and Pattern Approach

PURPOSE/AIM
To depict spectrum and diagnostic approach to thoraco-abdominal lesions

CONTENT ORGANIZATION
Lesions located contiguously both in thorax and abdomen form a heterogeneous spectrum. A diagnostic pattern approach based upon location and extension through natural or acquired defects in the diaphragm will be outlined. These lesions will be classified as follows:
1) Midline lesions
   A) Through natural diaphragmatic openings
      (i) Esophageal hiatus: Hiatus hernia, achalasia cardia, esophageal tumours, varices.
      (ii) Vena cava hiatus: Azygos continuation of IVC, IVC leiomyosarcoma
   (iii) Aortic hiatus: Descending aortic aneurysm
   B) Through diaphragmatic defects
      (i) Post traumatic central tendon hernia
   (ii) Congenital Morgagni's hernia
C) Paravertebral pathologies: Abscesses, hematomas, neurogenic tumours, neuroenteric cyst, pancreatic pseudocyst, lymphadenopathy, metastasis, extramedullary hematopoeisis
2) Off-midline lesions:
   A) Contiguous spread of hepatic/splenic pathologies into thorax such as hydatid cysts, abscess
   B) Congenital Bochdalek's hernia
   C) Traumatic diaphragmatic rupture

SUMMARY
Thoraco-abdominal lesions form an interesting albeit a diverse spectrum. Using a systematic, multimodality imaging approach, these lesions can be easily differentiated from each other.

Extinct Radiology Procedures of a Bygone Era: I Can't Believe We Used to Do That!

PURPOSE/AIM
The viewer will gain an understanding and/or recollection of antiquated radiographic procedures, which were performed routinely and required great skill, but are now defunct. As well as gaining an understanding of how technological advances made these procedures obsolete.

CONTENT ORGANIZATION
This exhibit will discuss the following antiquated radiology procedures. The indication, methods, purpose, side effects, representative images, and the technological developments that rendered the procedure obsolete will be discussed.

- Bronchography
- Tomography
- Pneumoencephalography/pneumomyelography
- Pneumovigiligraphy
- Retroperitoneal pneumography
- Pneumomediastinography
- Diagnostic pneumothorax
- Lymphangiography
- Angiography for cerebral midline shift, subdural hemorrhage, pancreatic/abdominal mass.
- Translumbar aortography
- Direct stick carotids
- Cardiac Series
- Oral cholecystigraphy
SUMMARY
For some viewers this exhibit will be an interesting stroll down memory lane, while for others it will be an intriguing look into radiology’s curious past and the technological advances that have lifted radiology to where it is today.

Current Status of Pharmacovigilance in MR Contrast Agents - Introduction to Methodologies, Current Global and US Landscape and Best Practices

LL-MSE1206
Michael V Knopp, MD, PhD
Krishan Kumar
Michelle I Knopp
Barbaros S Erdal, DDS, PhD
Zarine K Shah, MBBS, MD
Hendrik Von Tengg-Kobligk, MD

PURPOSE/AIM
As safety of MR contrast agents has become a relevant topic in recent years due to adverse events such as spurious hypocalcemia and nephrogenic systemic fibrosis (NSF), this exhibit reviews the current pharmacovigilance processes in place that are used by the manufacturers and regulatory agencies. Local best practices of pharmacovigilance will be also introduced as well as a review of the current MR agents available presented.

CONTENT ORGANIZATION
The science of pharmacovigilance History and chemistry of MR Contrast agents Adverse event reporting The difference between AE in clinical trials and spontaneous reporting The FDA MEDWATCH reporting system Relevant pharmacovigilance data of MR contrast agents - The current local, national and global landscape Local best practices of pharmacovigilance of MR contrast agents Further literature and references

SUMMARY
While we utilize MR contrast agents routinely, extensively and appropriately, our community is not well educated on the pharmacovigilance of MR contrast agents, the processes, the best practices and the available data. This exhibit present a comprehensive introduction and the current state of the art from a regulatory and local environment perspective.

Echoes under Your Skin

LL-MSE1207
Maria F Garcia, MD, MS
Armando D Guerrero
Maximiliano Francabandiera, MD, PhD
Julieta R Crosta, MD, MS
Fernando A Abramzon, MD
Juan P Biosci, MD
Guillermo H Primucci, MD
Leo M Lopez, MD

PURPOSE/AIM
To present iconography by ultrasound anatomy, normal aspects of skin, and different common pathologies in the daily practice of dermatology clinics, using a soft tissue transducer 6-12 MHz. Our purpose is to encourage exploration of the skin and annexes with this imaging method, a technique that is inexpensive, safe, fast and dynamic.

CONTENT ORGANIZATION
We describe the normal anatomy and pathologic variants, dimensions, echotexture, homogeneity, presence or absence of calcifications, morphological characteristics, location and compromised skin layers as well as through its vascular color flow, making it possible in some cases to approach an etiologic diagnosis. We analyze the ultrasonographic features of the most common injuries such as pilosebaceous unit cysts, lipomas, hemangiomas, lymphangiomas, Pilomatrixomas, bursitis, foreign body granulomas, hematomas, collections and lymphadenopathy.

SUMMARY
Ultrasonography allows excellent assessment of soft tissue injuries, including skin lesions, to locate and measure the lesions accurately and identify their source, contributing with the selection of an adequate therapeutic strategy.

Normal Findings on Postmortem Computed Tomography!

LL-MSE1209
Patricia M Flach, MD
Andreas Christe
Garyfalia Ampanozi, MD
Nicole Berger, MD
Dominic Gascho
Thomas D Ruder, MD
Wolf Schweitzer, MD
Lars C Ebert, PhD
Michael J Thali, MD
Steffen Ross, MD

PURPOSE/AIM
In this educational exhibit, we review typical postmortem findings and frequent pitfalls, especially regarding a correlation to clinical scans, with autopsy correlation.

CONTENT ORGANIZATION
— Imaging of the Head
  o Loss of cortico-medullary differentiation
  o Cerebral swelling
  o Hyperdensity of the sagittal sinus and cortical veins
  o Intracranial hemorrhage
  o Putrefaction vs. gas embolism
  o Thermal lesions. — Imaging of the Neck (incl. Strangulation)
  o Strangulation
  o Laryngeal lesions
  o Frequent foreign material
  o Refractory death by bolus — Imaging of the thorax / abdomen
  o Inner livores vs. lung pathology
  o Drowning
The Imaging and Radiation Oncology Core (IROC) Effort for the NCI National Clinical Trial Network (NCTN)

LL-MSE1210
Michael V Knopp, MD, PhD
David S Followill, PhD
Mark A Rosen, MD, PhD
Thomas J Fitzgerald, MD
James M Galvin, MD
Jeff M Michalski, MD
Jun Zhang, PhD
Elizabeth O’Meara
Fran Laurie, BS
Steven King

PURPOSE/AIM
This exhibit introduces the organization and forward looking vision of the IROC effort organized with the American College of Radiology to provide a fully integrated, comprehensive quality assurance effort for Imaging and Radiation Oncology for the five network groups of the NCI National Clinical Trial Network. This effort integrates six QA centers: the ACRIN Core Laboratory (Philadelphia), the Alliance and SWOG Imaging Core Lab at OSU, the QARC (Rhode Island), the RPC at MD Anderson, the ATC (Wash U in St. Louis) and RTOG Core Lab (Philadelphia). Unified qualification, credentialing and quality assurance procedures will cover all aspects of this service that will bring an unmatched ability to manage standardization and quality for imaging and radiation oncology within oncologic trials.

CONTENT ORGANIZATION
Introduction of NCI’s National Clinical Trial Network Vision of IROC Tasks of the Imaging and Radiation Oncology Core Service Overview of services that will be provided Sample of best practices for imaging and radiation therapy quality assurance What does this effort mean to an Imaging or Radiation Therapy Site that serves patients participating in NCI Clinical Trials?

SUMMARY
The IROC for the NCTN will be the largest, most comprehensive quality assurance effort for imaging and radiation therapy quality assurance in oncology trials.

Solitary Fibrous Tumor: (Not) So Lonely

LL-MSE2641
Ana Luisa L Loureiro, MD
Vasco Marques, MD
Joao P Niza, MD
Marta M Palmeiro, MD
Elisa M Abreu, MD
Pedro Pereira, MD
Rui Gil, MD
Jose P Penedo, MD

PURPOSE/AIM
To illustrate the spectrum of appearances of solitary fibrous tumors, (localized or disseminated, pleural or extrapleural, benign or malignant) using cross-sectional imaging techniques.
To review the imaging features that aid in diagnosis.

CONTENT ORGANIZATION
A database review at our oncologic institution over the last seven-years retrieved 30 patients with the histological diagnosis of solitary fibrous tumors (SFTs). The authors evaluated the CT and/or MR imaging findings of SFTs in a variety of anatomic sites including lung, pleura, mediastinum, liver, mesentry, parotid, thyroid, orbit and several soft tissue regions (gluteus, shoulder, dorsal, face, axilla), including both benign and malignant SFTs. The content presentation will start with an introduction and description of the clinical and pathologic features. CT and MRI findings in SFTs will be discussed and illustrative cases will be provided. It will end with a final conclusion.

SUMMARY
SFTs are rare mesenchymal tumours of myofibroblastic origin. Although SFT were previously though to occur most commonly in the pleura, it can originate in virtually any site of the body. Most of SFTs are considered benign, with 15-20% having a malignant behavior. Cross-sectional imaging studies play a major role in detection, characterization and localization of SFTs.

Retroperitoneal Fasciitis: Spectrum of CT Findings in the Abdomen and Pelvis

LL-MSE2642
Michael P Loreto, MD, MSc
Christina Chingkoe, MD
Ali Jareed, MD, PhD
Josee Sarrazin, MD
Caitlin T McGregor, MD
Phyllis Glanc, MD

PURPOSE/AIM
1. Review the common etiologies and risk factors for retroperitoneal fasciitis (RPF). 2. Discuss the spectrum of CT imaging findings for RPF. 3. Identify potential mimickers and differential considerations for RPF on CT.

CONTENT ORGANIZATION
Retroperitoneal fasciitis is a rare, but rapidly progressive infection involving the deep soft tissues of the abdomen and pelvis. The disease spectrum ranges from simple fasciitis to the potentially life threatening necrotizing form. The classic CT finding of gas tracking along fascial planes has been described, but is only seen in a minority of cases. Other important findings include asymmetrical fascial thickening, edema, or enhancement, fat stranding and focal collections. Early recognition on imaging is crucial in directing definitive treatment, and should be particularly considered in post-surgical and post-partum patients presenting with sepsis and inordinate pain.

SUMMARY
1. Etiologies include pyelonephritis, pelvic inflammatory disease and deep soft tissue infections of the lower extremities. Risk factors include obesity, diabetes, immunocompromised state and recent surgery. 2. Imaging findings include asymmetrical fascial gas, thickening, edema, or enhancement, fat stranding and focal collections. 3. Subcutaneous and retroperitoneal air from other causes, such as bowel perforation, can mimic RPF.

**Hold that Scalpel! Findings on CT of the Abdomen and Pelvis to Think Twice about before Intervening**

**LL-MSE2643**  
Ryan B Swowe, MD  
Michael J Reiter, MD  
Christopher J Lisanti, MD *

**PURPOSE/AIM**  
1. Recognize imaging findings on CT of the abdomen and pelvis that can mimic neoplasm. 2. Demonstrate how patient history, prior imaging, meticulous image interrogation and multiplanar reformations, multiphasic imaging, and other modalities can assist the radiologist in differentiating these mimickers from significant pathology.

**CONTENT ORGANIZATION**  
1. This exhibit shows findings on abdominal and pelvic CT that can present as pseudotumors. 2. Examples include: dropped gallstones, inguinal mesh plug, focal fatty infiltration of the pancreas, and aberrant renal papilla. 3. Imaging findings, techniques, and clinical history clues that aid in the correct diagnosis are illustrated in a case-based format.

**SUMMARY**  
The radiologist can encounter benign or non-clinically significant imaging findings that can be incorrectly interpreted as neoplasm. These findings are often post-surgical/treatment in etiology, making knowledge of the patient’s history imperative. Congenital anomalies, vascular entities, and sequelae of chronic disease processes may also have imaging findings that can be confused as significant pathology. It is important for radiologists to recognize such mimickers by using clues pointing to their diagnosis. Misinterpretation can result in unneeded follow-up imaging, inaccurate staging, improper treatment, unnecessary biopsy or surgery.

**Complications of Stem Cell Transplantation - Sonographic Findings**

**LL-MSE2644**  
Anil Chauhan, MD  
Naveen Garg, MD *  
Priya R Bhosale, MD

**PURPOSE/AIM**  
Stem cell transplantation (SCT) is usually performed for refractory leukemia or lymphoma. Complications may vary depending on the type of transplant performed. We will discuss acute and chronic complications seen on ultrasound following SCTs.

**CONTENT ORGANIZATION**  
1. Discuss types of SCTs and thoraco-abdominal complications associated with them. 2. Exemplify pleural effusion, ascites, acute or chronic graft versus host disease of small bowel, hepatic veno-occlusive disease, hepatic or portal venous thrombosis, renal failure, opportunistic infections, hemorrhagic or non-hemorrhagic cystitis, and gallbladder wall thickening. 3. Important differential diagnoses with each example, as well as secondary findings on ultrasound exam along with important clinical information, which may help establish the diagnosis of complications.

**SUMMARY**  
Patients undergoing SCT are at high risk for complications, which may be life-threatening. The awareness of the sonographic manifestations of these complications among radiologists can help direct appropriate and timely management of the patient.

**The Many Faces of Small Cell Carcinoma: A Literature and Pictorial Review of Extrapulmonary Small Cell Carcinoma with Radiologic-Pathologic Correlation**

**LL-MSE2645**  
Abigail V Berniker, MD  
Ahmed Abdulrahman, MD  
Oleg Teytelboym, MD  
Lorenzo Galindo  
Justin E Mackey, MD

**PURPOSE/AIM**  
This exhibit aims to:  
-Provide an overview of extrapulmonary small cell carcinoma (EPSCC), which is a rare but aggressive neoplasm that can arise in virtually any organ  
-Enhance familiarity with EPSCC through a case-based pictorial approach that provides radiologic-pathologic correlation of EPSCC in multiple organs

**CONTENT ORGANIZATION**  
-Overview/purpose  
-EPSCC: background and review of the literature  
- Epidemiology  
- Histologic features  
- Staging  
- Treatment options and prognosis  
-Case examples of EPSCC involving multiple organs (including cervix, anorectum, duodenum, prostate, gallbladder) highlighting radiologic-pathologic correlation  
-Summary and future directions

**SUMMARY**  
EPSCC is a rare but aggressive entity that represents up to 5% of all small cell carcinoma cases. Although EPSCC is most commonly described in the gastrointestinal and genitourinary systems, it has been reported in nearly every organ in the body. EPSCC poses diagnostic and therapeutic challenges as it is characterized by high rates of recurrence and poor survival. It is important for radiologists to gain familiarity with the range of imaging findings in order to contribute to the multidisciplinary management of patients with EPSCC and improve patient outcomes.

**Multisystemic Complications of CSF Diversion Procedures: An Imaging Review**

**LL-MSE2646**  
David Bowden, MBBChir  
Daniel J Scoffings, MBBS

**PURPOSE/AIM**
The purpose of the exhibit is to:

- Review the different techniques employed as part of cerebrospinal fluid (CSF) diversion procedures
- Describe the normal radiological appearances of such procedures
- Illustrate the spectrum of complications that may occur, emphasising those that require emergent management

**CONTENT ORGANIZATION**

- Review of the indications for and techniques of CSF diversion procedures, including external ventricular drainage, third ventriculostomy, ventriculo-peritoneal/pleural/atrial shunts and lumboperitoneal/pleural shunts
- Multimodality illustration of the normal radiological findings, with a focus on MDCT features
- Case-based imaging review of multisystemic complications, including shunt malfunction, infection, hemorrhage and metastasis

**SUMMARY**

Major teaching points:

- A broad range of CSF diversion procedures exist as part of management of hydrocephalus
- Significant complications, some of which may be life-threatening, can result from such surgical techniques
- Key imaging findings must be recognized in order to expedite management
The purpose of this exhibit is:
1. To review the usual and unusual locations for Hydatid cysts with examples 2. To classify locations and lesions by feasibility of percutaneous treatment (PCT) based on our institutional experience 3. To briefly discuss techniques, challenges and complications of percutaneous treatment at these locations

SUMMARY
The major teaching points in this exhibit are: 1. Percutaneous treatment is safe and effective for at least type I and type II hydatid cysts with low recurrence rates 2. PCT is routinely done for hepatic, pulmonary and splenic hydatid cysts with literature evidences for experimental procedures at pancreatic, peritoneal and retroperitoneal locations 3. Role of cross sectional imaging in guiding interventionist is discussed 4. Site specific challenges and technical modifications are elaborated

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Model-based Iterative Reconstruction (MBIR) Implementation: Process Description and Lessons Learned

**LL-MSE2650**
Corey T Jensen, MD
Nicolaus A Wagner-Bartak, MD
Minesh P Patel, ARRT
Xiujiang J Rong, PhD
Erik Paulson, MD
Eric P Tamm, MD

**PURPOSE/AIM**
2. Increase awareness of additional procedural steps with MBIR relative to conventional CT.

**CONTENT ORGANIZATION**
1. Background
   a. What is Veo?
      i. Overview of system (hardware/software)
      ii. Usage to reduce CT radiation dose
   iii. Managing increased processing time
   iv. Choosing appropriate patients
   v. Delivering timely radiology reports
2. Implementing Veo
   a. Iterative approach to gradually reduce dose and increase familiarity with Veo
   b. Training technologists
3. Using Veo
   a. Technologist workflow
      i. Overview of steps.
      ii. Checklist to confirm completion of necessary steps
   b. Automated Tube Current Modulation
      i. Use of appropriate measures of patient size.
      ii. Separate abdomen/pelvis scanning.
   c. Potential problems and solutions
   i. Technologist instructions
   ii. Veo artifacts: when and how to correct.
   d. Effective use of reconstruction software to create necessary images for radiologic review
   e. Formatting studies with Veo and non-Veo images.

**SUMMARY**
1. Veo is a complex technique that can facilitate significant CT radiation dose reduction.
2. While multiple additional steps are needed to effectively implement Veo, these can be accomplished reliably through an organized, systematic approach.

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Key Imaging Characteristics of Hepatic Metastasis from a Wide Spectrum of Primary Malignancies: A Comprehensive Review

**LL-MSE2651**
Shaleen Kaur, MBBS, FRCR
Jyothirmayi Velaga, MBBS, FRCR
Nanda Venkatanarasimha, MRCP, FRCR

**PURPOSE/AIM**
1. Review imaging patterns of hepatic metastasis from various tissues of origin
2. Illustrate and describe the key features that can suggest the primary
3. Discuss the utility of imaging modalities with special emphasis on MDCT and MRI

**CONTENT ORGANIZATION**
Systematic review:
- morphology - haemorrhagic, cystic, calcified, fat, gas containing
- enhancement - cauliflower, target-like, hyper and hypovascular
- location - serosal, intraparenchymal, intraductal
- associations - intrahepatic biliary dilatation, subcapsular retraction
- coexisting hepatic disease (**diffuse** - fatty change, cirrhosis; **focal** - polycystic liver disease, biliary hamartoma, abscess
- Post-treatment - pseudocirrhosis, pseudocyst, post-RFA

Histopathological correlation
Imaging pitfalls and differential considerations
Management implications - role of metastasectomy and percutaneous treatment

**SUMMARY**
Hepatic metastasis is not uncommon in the presence of a known or unknown primary. Accurate characterization can suggest the:
- site/tissue of origin in patients with occult primary and direct timely further investigations (eg: metastasis + intrahepatic biliary dilatation may warrant evaluation for an occult colonic primary)
- prognosis and streamline further management

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Radiologic Findings in Rosai-Dorfman Disease

**LL-MSE2652**
PURPOSE/AIM
Rosai-Dorfman disease or sinus histiocytosis with massive lymphadenopathy, is a rare, idiopathic, non-neoplastic histiocytic proliferative disorder. Our purposes are: -to describe the clinical symptoms of this rare entity, -to show its typical radiologic features, -to show some atypical radiologic findings, -to provide a comprehensive differential diagnosis, - and to give some clues for the diagnosis of the disease.

CONTENT ORGANIZATION
The most common presentation of Rosai-Dorfman disease is painless cervical bilateral lymphadenopathy, with fever in a young patient. But it also may arise in extranodal sites, like skin, soft tissues and the upper respiratory tract (being the nasal cavity and paranasal sinuses, the most frequently observed sites), breast, thyroid, SNC, ophthalmic structures and bone. We point at both clinical and radiologic atypical presentations (like advanced ages, predominant skeletal involvement...) that may lead to a wrong diagnosis.

SUMMARY
Rosai-Dorfman disease (RDD) is a rare entity that presents in young patients, with bilateral cervical painless lymphadenopathy. Less commonly it may have extranodal involvement. Atypical clinical and radiologic findings (patients of advanced age, disseminated bone lesions...) may lead to a wrong diagnosis.

Changes in Pelvic Anatomy Following Pelvic Exenteration, Imaging Findings Pelvic Exenteration for Pelvic Malignancies: A Systematic Review

LL-MSE2653
Sunil Jeph
Priya R Bhosale, MD
Chitra Viswanathan, MD *
Madhavi Patnana, MD
Catherine E Devine, MD
Tara L Sagebiel, MD
Kathleen Schmeler, MD
Pedro T Ramirez, MD

PURPOSE/AIM
1. To learn the types and indications for pelvic exenteration using CT and MRI images of the pelvis.
2. To learn the imaging features of different types of pelvic exenteration using cross sectional imaging modalities.

CONTENT ORGANIZATION
Cross sectional imaging plays an essential role in the evaluation of pelvic organs in the diagnosis, staging, restaging, surveillance and surgical planning of oncological patients. Pelvic exenteration may be performed for locally advanced primary malignancies of the pelvis as a palliative procedure/ definitive treatment (advanced rectal cancer, bladder cancer, prostate cancer) or for recurrent disease. While interpreting pelvic imaging, the changes in pelvic anatomy following pelvic exenteration (total, anterior, posterior and central), may confound image interpretation. In this exhibit we will discuss the types of pelvic exenteration and the indications. We will also discuss the complications and changes in the pelvic anatomy seen following these types of surgery.

SUMMARY
On completion of this exhibit the attendant will become familiar with the indications and types of pelvic exenteration. The attendant will also learn of complications and the changes in cross sectional pelvic anatomy following these surgical procedures that are commonly performed for locally advanced pelvic tumors and recurrent disease.

New Era of Tumor Response Criteria in Oncologic Imaging. What the Radiologist Needs to Know about Targeted Therapies

LL-MSE2655
Temel Tirkes, MD
Zachary E Ballenger, MD
Chandana G Lall, MD
Fatih Akisik, MD *
Alex M Aisen, MD *

PURPOSE/AIM
1. Explain the new concepts in oncologic treatment
2. Describe the new tumor response criteria specifically designed for targeted therapies
3. Explain what the radiologist need to know when reading CT/MRI or CT-PET on oncologic patients being treated with new cytostatic therapies

CONTENT ORGANIZATION
1. Review the most common targeted therapies and mechanism of action
2. New response criteria specifically designed for targeted therapies in clinical trials
   I. Choi’s Response Criteria
   II. PERCIST
   III. mRECIST (for Hepatocellular Carcinoma)
   IV. IrRC (for melanoma)
   V. Cheson criteria (for Lymphoma)
3. Quantitative measurements and post-processing
4. Clinical summaries and case based images
5. Comparisons with traditional criteria; RECIST and WHO

SUMMARY
This is a case-based review of disease and therapy specific aspects of emerging response evaluation criteria by CT, MRI and FDG-PET. Targeted therapies are designed with entirely new concept of inducing apoptosis compared to traditional cytotoxic drugs. Imaging modalities allow monitoring the changes in tumor size, morphology and metabolism during the course of therapy. Several criteria based on size, morphology or functional change of the tumor have been developed to analyze tumor response observed during the course of the therapy, in order to provide an early assessment of the treatment.

PET/CT Findings in Experimental Monkeypox Infection in Nonhuman Primates: Correlation with Histopathology and Viral Load

LL-MSE2656
Nilo A Avila, MD
Julie Dyall, PhD
David M Thomasson, PhD
Jennifer Hufton
Danny Ragland
Louis Huzella
Peter Jahrling
Reed Johnson
 PURPOSE/AIM
New research in the field of orthopoxvirus infection has been stimulated by reports of: (1) increased efficiency of human to human transmission, (2) increase in the number of observed animal hosts, (3) relatively high mortality (10%) in humans, and (4) concerns about the use of orthopoxviruses for bioterrorism. The purpose of this exhibit is:
- to review the pathophysiology of monkey pox infection
- to describe the PET/CT findings in experimental intrabronchial and IV inoculated monkeypox infection in nonhuman primates
- to correlate the imaging findings with pathology and virology findings

CONTENT ORGANIZATION
Pathophysiology of orthopoxvirus infection. Review of PET/CT imaging findings at baseline and during the course of disease and correlation with pathology and virology. Sample cases:
- lung nodules that progress to areas of consolidation associated with hemorrhage and necrosis
- lymphadenopathy associated with lymphocytosis and edema
- splenomegaly

Summary
Findings in this experimental animal model may be useful to:
1. improve the diagnosis and clinical management of orthopoxvirus infection
2. demonstrate the progression of disease
3. support the development of an animal model for safety and efficacy testing of human therapy regimens

Radiographic Appearance of Buttocks Augmentation

LL-MSE2657
Susan J Frank, MD
Shari Friedman, MD
Milana Flusberg, MD
Michael J Sternschein, MD
Marjorie W Stein, MD
Ellen L Wolf, MD

PURPOSE/AIM
Cosmetic buttocks augmentation is popular, both in the US and internationally. Liposuction for reshaping and augmentation with autologous fat grafting or gluteal implant insertion are approved techniques in the US. Buttocks augmentation with silicone injection is not FDA approved. Many patients receive buttocks injections of non-medical, impure silicone or other substances by unlicensed persons. Illicit injections can lead to unusual radiographic appearances and can result in serious complications. Our objective is to review the CT imaging features of buttocks augmentation, which have not been previously described in the literature. Correlation with MRI and radiographs are provided in select cases.

CONTENT ORGANIZATION
1. Describe various methods of buttock augmentation
2. Present the CT appearance of buttocks injections-nodular, infiltrative and confluent patterns, areas of high density
3. Illustrate the complications—cellulitis, abscess, silicone migration

SUMMARY
Educational Goals/teaching points: To familiarize the radiologist with the CT appearances of buttock injections and implants and their complications. Conclusions: After our review, the radiologist will be able to recognize the appearance and understand the complications of buttocks augmentation.

Internal Anomalies in Thalidomide Embryopathy: Common and Uncommon Findings on CT and MRI

LL-MSE2658
Tatsuya Wada, MD
Kanehiro Hasuo, PhD
Tsuyoshi Tajima, MD, PhD
Takashi Okafuji, MD
Tomohiro Nakayama, MD, PhD
Yoriko Egami
Hioko Kaname
Masafumi Toguchi, MD
Atsuto Yoshizawa

PURPOSE/AIM
1. To understand the background of thalidomide embryopathy (TE).
2. To review the radiological findings of TE.
3. To recognize the radiological prevalence of internal anomalies in TE.

CONTENT ORGANIZATION
1. History of thalidomide
2. Possible indications
3. Teratogenic mechanism
4. Notable people affected in the world
5. Common and uncommon radiological findings of TE: case review
6. Prevalence rates of internal anomalies in TE by using CT and MRI

SUMMARY
Thalidomide has recently become to be used again for multiple myeloma, erythema nodosum or myelodysplastic syndrome, after the withdrawal from the market because of its teratogenic effects. It has been well known that thalidomide causes limb deformities, but it can also cause internal anomalies in auditory organ (hypoplasia of the semicircular canals/auditory ossicles), central nervous system (hypoplasia or aplasia of the 7th/8th cranial nerves), cervical vertebrae (block vertebrae), hepatobiliary system (hypoplasia of the fissure for ligamentum teres, agenesis of the gallbladder) and cardiovascular system (double SVC) although some of their radiological incidences are not reported in detail. In this exhibit, we will review the wide range of radiological findings of TE and disclose the prevalence rates among the registered patients of the thalidomide disaster in Japan.

Should You â™† Sit? on This? What to Do When You Get Behind. A Review of Lesions Presenting in the Posterior Gluteal Region

LL-MSE2659
Timothy J McCue, MD
Yulia Melenevsky, MD
Norman B Thomson, MD
Lesions arising in the gluteal region are unique, but not unusual. This review will discuss commonly encountered lesions arising in and extending to the gluteal region, presenting as buttock mass, as well as outline features of aggressive and other lesions warranting further investigation. Cases will be presented using imaging from multiple modalities including MRI, Ultrasound, CT, and Nuclear Medicine.

A multitude of lesions can present as a buttock mass. This exhibit presents imagers with a collection of cases illustrating principles of differential diagnosis based on location and imaging features of masses in the gluteal region ranging from calcified injection granulomas to highly aggressive neoplasms.

PURPOSE/AIM

The purpose of this exhibit is:
1. To learn about CMV (cyto-megalo-virus), way of action, sites of infection
2. To emphasize the predisposing conditions making us keep CMV in differentials
3. To review the imaging findings with corresponding pathological changes of CMV infections and the differentials

CONTENT ORGANIZATION

1. CMV infections
   - Epidemiology
   - Risk factors
   - Viral structure
   - Pathogenesis

2. Imaging - Pathologic findings of CMV infections
   - Pneumonia
   - Enterocolitis
   - Congenital
   - Menengitis
   - Miscellaneous

3. Differential diagnosis

SUMMARY

Take-home messages from this exhibit:
1. CMV causes infections in both immunocompetent and immunosuppressed patients, keeping CMV infections in mind can be life-saving.
2. Imaging findings of CMV infection may vary depending on the immune status.
3. Ground-glass opacities with micronodules dominant in bases of lungs is a warning sign for CMV pneumonia.
4. Intestinal wall thickening, enhancement with hemorrhage knowing the poor patient condition are important findings for CMV enterocolitis.
5. Ependymal, meningeal contrast enhancement with flu border edema is commonly seen CMV related CNS infections in HIV positive patients.

PURPOSE/AIM

1. To review the complications of newer biological chemotherapy that may mimic tumor progression.
2. To identify altered post-surgical anatomy that causes difficulty in image interpretation.

CONTENT ORGANIZATION

1. Background of newer chemotherapy agents
2. Complications of chemotherapy agents that may be mistaken for tumor, e.g., drug-induced pneumonitis, bowel wall thickening with Bevacizumab, venous thrombosis with sunitinib, hypermetabolic lymph nodes following immune therapy with ipilimumab, posterior reversible encephalopathy due to sorafenib simulating brain metastases.
3. Post surgical / radiotherapy findings that simulate tumor or treatment complication, e.g. inguinal plug mimicking lymphadenopathy, ovarian transposition in cervical cancer, gelfoam mimicking abscess, neoadjuvant radiotherapy for pancreatic cancer simulating tumor progression.
4. Conclusions

SUMMARY

1. Knowledge of the side effects of newer biological therapy is important for radiologists.
2. Radiologists need to differentiate expected post surgical anatomy, from treatment complications and tumor progression.

PURPOSE/AIM

The purpose of this exhibit is:
1. To learn about CMV (cyto-megalo-virus), way of action, sites of infection
2. To emphasize the predisposing conditions making us keep CMV in differentials
3. To review the imaging findings with corresponding pathological changes of CMV infections and the differentials

CONTENT ORGANIZATION

1. CMV infections
2. Imaging - Pathologic findings of CMV infections
3. Differential diagnosis

SUMMARY

Take-home messages from this exhibit:
1. CMV causes infections in both immunocompetent and immunosuppressed patients, keeping CMV infections in mind can be life-saving.
2. Imaging findings of CMV infection may vary depending on the immune status.
3. Ground-glass opacities with micronodules dominant in bases of lungs is a warning sign for CMV pneumonia.
4. Intestinal wall thickening, enhancement with hemorrhage knowing the poor patient condition are important findings for CMV enterocolitis.
5. Ependymal, meningeal contrast enhancement with flu border edema is commonly seen CMV related CNS infections in HIV positive patients.

PURPOSE/AIM

1. To review the complications of newer biological chemotherapy that may mimic tumor progression.
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CONTENT ORGANIZATION

1. Background of newer chemotherapy agents
2. Complications of chemotherapy agents that may be mistaken for tumor, e.g., drug-induced pneumonitis, bowel wall thickening with Bevacizumab, venous thrombosis with sunitinib, hypermetabolic lymph nodes following immune therapy with ipilimumab, posterior reversible encephalopathy due to sorafenib simulating brain metastases.
3. Post surgical / radiotherapy findings that simulate tumor or treatment complication, e.g. inguinal plug mimicking lymphadenopathy, ovarian transposition in cervical cancer, gelfoam mimicking abscess, neoadjuvant radiotherapy for pancreatic cancer simulating tumor progression.
4. Conclusions

SUMMARY

1. Knowledge of the side effects of newer biological therapy is important for radiologists.
2. Radiologists need to differentiate expected post surgical anatomy, from treatment complications and tumor progression.
Increasing Diagnostic Confidence in Oncology with Spectral CT

PURPOSE/AIM
To demonstrate the ability of spectral CT to aid in the detection of not only liver, kidney and pancreas tumors, but also intestinal, urothelial, pleural, pulmonary and breast tumors and to investigate whether spectral CT can discriminate between benign and malignant tumor entities and has a role in oncologic follow-up during and after treatment.

CONTENT ORGANIZATION
The use of spectral CT in liver, pancreas and kidney tumors is already documented. Spectral CT can also help in the diagnosis of malignant tumors of the upper GI tract and the small and large bowel as well as pleural and pulmonary nodules and masses and is sensitive in the detection of even small urothelial and breast tumors. By means of iodine based color coding and iodine concentration measurements lymph node involvement can be investigated and compared to other imaging techniques. Contrary to conventional CT which can only evaluate tumor response or progression by measuring tumor size and density, spectral CT adds an extra dimension by evaluating residual tumor dose estimate, a newly described descriptor which likely more accurately reflects true patient dose will be covered. This exhibit will also help to frame radiation risks in patient friendly terms for effective physician-patient conversations.

SUMMARY
This exhibit will help to familiarize the learner with issues of CT dose, how it is measured, and the associated risks. Specifically, size specific dose estimate, a newly described descriptor which likely more accurately reflects true patient dose will be covered. This exhibit will also help to frame radiation risks in patient friendly terms for effective physician-patient conversations.

Augmenting the Interpretation: The Imaging of Implants and Their Complications

PURPOSE/AIM
1. Review the expected imaging features of implants in the head, neck and body
2. Review the imaging features of implant failures or complications

CONTENT ORGANIZATION
1. Introduction
2. Head and neck implants: cochlear, ossicular chain, eye, chin, cheek, jaw and larynx
3. Body implants: Silicon and saline breast implants (common and unusual rupture patterns), breast tissue expanders, buttock augmentation with gluteal implants, and penile prosthesis
4. Summary and Conclusion

SUMMARY
Implants are increasingly used for cosmetic and functional purposes. Radiologists are often asked to evaluate for normal and expected post-operative findings after implant placement and to determine complications or evidence of implant failure. In addition, radiologists need to be familiar with expected radiologic features of different types of implants in order not to mistake them with other pathologies. In this exhibit, we will illustrate spectrum of findings in implant complications or failure.

Radiologistâ€™s Perspective on Hormones in a Tertiary Cancer Center: The Good, the Bad, the Ugly

PURPOSE/AIM
Exogenous hormones have anti-cancer effect in hormone-dependent malignancies and are used at various time-points including neoadjuvant (angiomyxoma), adjuvant (breast cancer) and metastatic (prostate cancer) settings. The aim of this exhibit is to illustrate the role of hormones as anticancer drugs emphasizing treatment response and highlighting the toxicities associated with them.

CONTENT ORGANIZATION
1. Hormones used in treatment of hormone-dependent malignancies – epithelial (breast, ovary, prostate, endometrium), mesenchymal (leiomyosarcoma, endometrial stromal sarcoma, angiomyxoma) and lymphoid (lymphoma, leukemia, multiple myeloma).
2. The Good: Response to treatment and associated imaging findings.
3. The Bad: Mild to moderate complications including thrombosis, hepatic steatosis, endometrial hypertrophy, osteoporosis.
4. The Ugly: Severe complications including pulmonary embolism, avascular necrosis, bowel perforation, endometrial cancer.

SUMMARY
Familiarity with the hormones used in cancer therapy, their treatment response patterns, and the spectrum of toxicities associated with their use can help radiologists to exert caution while interpreting the imaging studies.

Increasing Diagnostic Confidence in Oncology with Spectral CT

PURPOSE/AIM
To demonstrate the ability of spectral CT to aid in the detection of not only liver, kidney and pancreas tumors, but also intestinal, urothelial, pleural, pulmonary and breast tumors and to investigate whether spectral CT can discriminate between benign and malignant tumor entities and has a role in oncologic follow-up during and after treatment.

CONTENT ORGANIZATION
The use of spectral CT in liver, pancreas and kidney tumors is already documented. Spectral CT can also help in the diagnosis of malignant tumors of the upper GI tract and the small and large bowel as well as pleural and pulmonary nodules and masses and is sensitive in the detection of even small urothelial and breast tumors. By means of iodine based color coding and iodine concentration measurements lymph node involvement can be investigated and compared to other imaging techniques. Contrary to conventional CT which can only evaluate tumor response or progression by measuring tumor size and density, spectral CT adds an extra dimension by evaluating residual tumor
activity during and after treatment by detecting iodine uptake as a measure for tumor vascularization and activity.

SUMMARY
Spectral CT has a potential role not only in the detection and staging of different tumors, but also in tumor discrimination and very probably in the follow-up of oncologic patients during and after treatment.

Infectious Complications of Solid Organ Transplant: A Pictorial Review

LL-MSE2666
Meghan G Lubner, MD *
Tabassum A Kennedy, MD
Sanjeev Bhalla, MD
Perry J Pickhardt, MD *
Christine O Menias, MD

PURPOSE/AIM
1. Review immunosuppression regimens.
2. Discuss early and intermediate period post-transplant infections.

CONTENT ORGANIZATION
Immunosuppression: Steroids, calcineurine inhibitors, anti-proliferative agents, therapeutic antibodies
Early Period infections: Bacterial (Staph, Pseudomonas), Invasive Aspergilus
Intermediate Period Infections (1-6 mos): Viral (CMV, HSV, Varicella Zoster), Fungal (Pneumocystis jiroveci, Mucormycosis, Aspergillus fumigatus, Cryptococcus), Bacterial (Legionella, Nocardia, Actinomycetes), Mycobacterial Transplant specific infections:
Renal: UTI, pyelonephritis, peritransplant abscess/urinoma, prostatitis
Liver: Bile leak/biloma, abscess, hemorrhage, cholangitis, peritonitis, recurrent hepatitis
Pancreas: Graft pancreatitis, Peritonitis, UTI, abscess
Lung: Pneumonia (Bacterial, viral, fungal)
Cardiac: Infective endocarditis, sternal wound infection, pneumonia
CNS specific: PML, HSV

SUMMARY
1. Improvement in immunosuppression has decreased transplant rejection but increased post-transplant infection.
2. Post-transplant patients are at high risk for opportunistic infections and transplant specific infectious complications.
3. Radiologists should be familiar with these infections and their imaging appearance to aid in prompt diagnosis and management.

Invasive Klebsiella Syndrome - Spectrum of Imaging Findings

LL-MSE2667
Sivasubramanian Srinivasan, MD, FRCR
Hui Seong Teh, MBBS, FRCR
Syed Zama Ali, FRCR
Michael J Clarke

PURPOSE/AIM
To present and review series of cases of invasive Klebsiella pneumoniae infections, involving various organs. To present role of image-guided interventions.

CONTENT ORGANIZATION
1. Provide brief information about epidemiology
2. Virulence factor of the bacilli
3. Present imaging findings of cases with single organ or disseminated/metastatic infections involving various organs such as brain, eye, lungs, liver, kidneys, prostate and musculoskeletal system.
4. Role of image-guided intervention.

SUMMARY
Invasive Klebsiella syndromes is relatively common in South-East Asia and East Asia, although few cases are recently reported in the USA. Patients usually present with Klebsiella bacteremia. The most common organ involved is liver and complex multiloculated monomicrobial abscess in the absence of hepatobiliary or colonic pathology is the characteristic feature. Other organs which can be involved are kidneys, prostate, eye, musculoskeletal system and very rarely brain. Metastatic infections are not uncommon. Imaging helps in localizing the source of infection as well as image-guided intervention.

Melioidosis from Head to Toe: A Pictorial Review

LL-MSE2668
Sivasubramanian Srinivasan, MD, FRCR
Hui Seong Teh, MBBS, FRCR
Dinesh D Chinchure, FRCR
Jerome I Bosco, MD, MBBS
Wilfred C. G Peh, MD

PURPOSE/AIM
To illustrate the imaging features of melioidosis involving various anatomic locations. To discuss the role of ultrasonography(US), computed tomography(CT) and magnetic resonance(MR) imaging in the diagnosis.

CONTENT ORGANIZATION
1. Brief epidemiology, microbiological information and predisposing factors
2. Common and uncommon organs involved with illustration
3. Pattern of presentation in the lungs
4. A great imitator - similarities with other infections especially Tuberculosis
5. Role of image-guided intervention with examples

SUMMARY
Melioidosis is endemic in Northern Australia and parts of South–east Asia. Lung is the most common organ involved, although any organ or tissue can be involved. Disseminated infection or multi-organ involvement can be seen in more than 50% of patients. Imaging pattern of the lung infection includes, segmental or lobar consolidation, multiple small (0.5–1cm) nodules and large cavities or abscesses. Musculoskeletal system, genito-urinary system, salivary glands, spleen and liver can be involved. Neurological involvement is extremely rare. Diagnosis is confirmed by blood tests and microbiological culture. Early recognition and prompt treatment is necessary to prevent morbidity and mortality. Imaging not only helps in early diagnosis and assessing the spread of infection, but also aids in management.

Cushing Syndrome; Pathogenesis, Diagnostic Work and Spectrum of Imaging Findings with Pathologic Correlation and Impact on Clinical Management

LL-MSE2669
Ali Baiomy
Mouhammed Amir Habra
Ajaykumar C Morani, MD
**Purposes/Aims**

- To illustrate the spectrum of imaging findings of adrenal and extra-adrenal etiologies as well as manifestations of disease.
- To describe the diagnostic workup of Cushing syndrome based on algorithmic approach.
- To discuss the pathogenesis of Cushing syndrome.

**Content Organization**

- Pathogenesis.
- Literature update.
- Algorithm of diagnostic workup of Cushing syndrome.
- Illustrative atlas of gross manifestations of Cushing syndrome.
- Imaging features for various manifestations and etiologies, including:
  - Pituitary micro and macroadenoma.
  - Inferior petrosal vein sampling.
  - Ectopic sources, such as thymic, bronchial and lung tumors.
  - Adrenal; various forms of adrenal ACTH dependent and independent masses, such as adenoma, ACTH dependent cortical hyperplasia, ACTH independent macro-nodular hyperplasia and pigmented nodular hyperplasia.
- Impact on clinical management.

**Summary**

Various adrenal and extra-adrenal findings can be found in Cushing syndrome. Radiologist should be familiar with the current algorithmic approach to the diagnostic workup and imaging features of various etiologies and manifestations. Comprehensive understanding of the clinical and radiological aspects enable radiologists performs a thorough search through a sound thought process to reach a specific diagnosis which impacts clinical management.

**Medical Applications of Diffraction Enhanced Imaging - An X-ray Phase Contrast Technique**

**LL-MSE2670**

Anish S Mann, BSc  
Gage R Watson  
Dean Chapman, PhD  
David Cooper  
Paul S Babyn, MD

**Purposes/Aims**

1. Review the basic principles of Phase Contrast X-ray Imaging (PCI) and Diffraction Enhanced Imaging (DEI).
2. Illustrate the various medical applications of DEI, with emphasis on breast, cartilage, and musculoskeletal (MSK) imaging.
3. Recognize DEI has evolved from a synchrotron only technique into a potential clinical imaging modality which can acquire images with more conventional x-ray tube sources.

**Content Organization**

An introduction to the variety of Phase Contrast X-ray Imaging (PCI) techniques and Diffraction Enhanced Imaging (DEI) specifically. The unique advantages of DEI compared to conventional radiography will be reviewed and illustrated. Specific medical applications of DEI to be illustrated include the following: Breast; MSK and Cartilage; Thorax (Lung, Heart, Abdomen); Head and Neck; Angiography. The future clinical potential of DEI will be discussed.

**Summary**

1. DEI is a promising phase contrast x-ray imaging technique that has shown significant potential in the areas of mammography, cartilage, and lung imaging.
2. DEI is capable of differentiating tissues of similar attenuation using phase information.
3. With recent optical advances, DEI images have been obtained using a conventional x-ray tube system increasing the importance for radiologists to understand and appreciate the capabilities of DEI.

**Immune Reconstitution Inflammatory Syndrome (IRIS): A Radiologist's Perspective**

**LL-MSE2671**

Chloe Symeonidou, MBBS  
Sharif Abdullah, MBBS  
Daniel Webster, MA, MRCP

**Purposes/Aims**

The purpose of the exhibit is:

1. To review the pathophysiology of Immune Reconstitution Inflammatory Syndrome (IRIS).
2. To discuss the clinical manifestations of IRIS.
3. To illustrate using a multimodality approach the radiological manifestations of IRIS.
4. To discuss the potential role of the Radiologist in the management of IRIS.

**Content Organization**

Pathophysiology of Immune Reconstitution Inflammatory Syndrome (IRIS): Clinical manifestations of Immune Reconstitution Inflammatory Syndrome (IRIS). Review of imaging findings of Immune Reconstitution Inflammatory Syndrome: with Tuberculosis with Progressive Multifocal Leuкоencephalopathy with Kaposi Sarcoma with others. Role of radiology in the management of Immune Reconstitution Inflammatory Syndrome.

**Summary**

The major teaching points of this exhibit are:

1. In the era of Highly Active Antiretroviral Therapy the understanding and recognition of Immune Reconstitution Inflammatory Syndrome (IRIS) is becoming increasingly important.
2. Radiological features may manifest as ‘unmasking’ of opportunistic infections, paradoxical worsening of an existing infection or condition or may be atypical.
3. There is a role for the Radiologist in the management of IRIS primarily in image guided drainage and biopsy.

**Whole-body Diffusion Imaging beyond Oncology**

**LL-MSE2672**

Marcos V Godinho, MD  
Ralph Strecker  
Romeu C Domingues, MD  
Leonardo K Bittencourt, MD, MSc

**Purposes/Aims**

- To review the technical aspects of the whole-body diffusion-weighted imaging (WBDWI) and the protocol used in a daily clinical routine.
- To discuss the possible indications of WBDWI and show our experience in oncology and beyond.
- To understand the limitations of this technique at the present and future directions.

**Content Organization**

- Physical aspects in the acquisition of diffusion-weighted images.
- MR imaging protocol: anatomic sequences and functional sequences, including post-processing.
- Important aspects in the interpretation of images: fusion of anatomic and functional images, qualitative and quantitative analyses, pitfalls.
- Indications for WBDWI and imaging findings: our experience with oncological patients (staging and follow up) and patients with infectious and auto-immune diseases.
- Limitations of WBDWI (absence of normal ADC maps, influence of treatments in bone marrow diffusivity, “blind spots”, imaging artifacts).
SUMMARY
WBDWI is a growing technique, with a great potential to help in the understanding and treatment monitoring of many diseases, not only in the oncologic setting. However, its exact role in non-oncological patients has yet to be proven in large clinical trials.

Initial Experience with Simultaneous MR/PET: Oncologic Applications and Pitfalls

LL-MSE2673
Hye Jin Yoo, MD
Jin Mo Goo, MD, PhD *
Chang Min Park, MD, PhD
Jin Chul Paeng
Jeong Yeon Cho, MD
Ji-Hoon Kim, MD

PURPOSE/AIM
To summarize the initial experience with simultaneous MR/PET in oncology and to describe the potential pitfalls and image artifacts in MR/PET imaging so that they can be avoided and appropriately interpreted.

CONTENT ORGANIZATION
1. Introduction of MR/PET imaging
   - Instrumentation and design
   - MR-based attenuation-correction
   - Potential advantages of MR/PET over PET/CT
2. Oncologic applications of MR/PET - Brain/ Head and Neck/ Chest/ Abdomen/ Pelvis/ Bone/ Pediatric applications: Indications, typical protocols - Tracers other than FDG
3. Pitfalls and artifacts in MR/PET
   1) Pitfalls in PET imaging
      - Normal physiological distribution of FDG in the body
      - Non-malignant causes of FDG uptake that can be confused with a malignant neoplasm
   2) Artifacts arising from MR attenuation correction
      - Truncation artifact
      - Non-uniformities
      - Motion artifacts
      - Underestimation of SUV in MR/PET
   3) Others
      - Problems related with biopsy
      - Dixon swap error
      - Calibration error of PET detector

SUMMARY
The initial experience with MR/PET shows promise as a new oncologic imaging modality with improved soft tissue contrast over CT, and potential for multiparametric imaging given the simultaneous acquisition. Knowledge of potential pitfalls and artifacts of MR/PET is essential before interpreting hybrid imaging to avoid misdiagnosis.

What Is That Thing? A Review of Iatrogenic Artefacts on Plain Film

LL-MSE2674
Francois Porte, MBBS, BSc
Asif Mazumder, MBBS, MRCP
Edward T Barden, MRCP, FRCR

PURPOSE/AIM
The purpose of this exhibit is: 1. To review the appearances of various iatrogenic foreign bodies and artefacts on plain film studies, particularly chest and abdominal studies. 2. To explain some of the more unusual artefacts which are less commonly encountered. 3. To compare the plain film appearances side-by-side with real life images of the medical apparatus.

CONTENT ORGANIZATION
Introduction with aims and explanation of format. Review of plain film imaging of multiple different foreign bodies. Explanations of the medical devices and side-by-side comparison of imaging with real-life pictures of the devices.

SUMMARY
The major teaching points of this exhibit: 1. To familiarise the reader with the appearances of various unusual medical devices on plain film. 2. To alleviate confusion regarding the rarer iatrogenic foreign bodies, enabling quicker and more accurate plain film reporting. 3. Direct comparison with real-life images of the devices increases understanding of the nature of the plain film appearances.

New Horizons in Forensic Imaging: Post Mortem CT Angiography - Benefits and Practical Application

LL-MSE2675
Jochen M Grimm, MD
Jessica Vanhaebost, MD
Richard Dirnhofer, MD
Audrey Rinaldi
Jean-Baptiste Zerlauth, MD
Patrice Mangin, MD, PhD
Silke Grabherr

PURPOSE/AIM
To learn about the development of post mortem CT angiography, its indications, benefits, pitfalls and practical application.

CONTENT ORGANIZATION
A. Development of post mortem CT angiography
B. Technical prerequisites
C. Practical application of post mortem CT angiography (preparation of the body, injection of contrast agent, examination protocol)
D. Indications and benefits (including a comparison with conventional autopsy)
E. Interpretation of imaging data (with case demonstrations)
F. Artifacts, pitfalls and limitations
G. Current and potential future use

SUMMARY
This exhibit demonstrates the development, application and interpretation of post mortem CT angiography. Teaching points: 1. post mortem CT angiography is feasible and useful for identification of the cause of death 2. depending on the indication it can be superior to autopsy 3. limitations and artifacts need to be known for interpretation.

Paradigm Shift Caused by Low-dose Non-helical Volume Scanning Using 320-slice Area Detector CT with Iterative Reconstruction: Freedom from Helical Scanning

LL-MSE2676
Tsuyoshi Morimoto, MD
Yasuyuki Kobayashi, MD, PhD
IgG4-related Sclerosing Disease: A Frequent Mimicker of Malignancy

PURPOSE/AIM
This exhibit aims to review a spectrum of imaging findings of IgG4-related sclerosing disease involving various organs that can mimic malignancy, exposing the patient to unnecessary invasive procedures.

CONTENT ORGANIZATION
1. Focal involvement of autoimmune pancreatitis manifesting as a pancreatic mass causing upstream bile duct and pancreatic duct dilatation. 2. IgG4-related sclerosing cholangitis demonstrating severe focal irregular thickening, stenosis, and enhancement of the bile duct. 3. Renal involvement with round renal cortical nodules or mass-like lesions. 4. Retropertitoneal or mesenteric involvement manifesting as an enhancing soft tissue lesion encasing abdominal vessels. 5. Abdominal, mediastinal, and cervical lymphadenopathy. 6. Mass-like swelling of salivary/lacrimal glands or orbital mass. 7. Nodular lesions in the lung.

SUMMARY
IgG4-related sclerosing disease most commonly involves the pancreas, but is now increasingly recognized in multiple organs. It is important to recognize the spectrum of multiorgan involvement patterns in IgG4-related sclerosing disease, especially the imaging patterns mimicking malignancy. A combination of clinical history, typical imaging findings, multiorgan involvement, and serologic markers often lead to the correct diagnosis, prompting an early treatment with steroid.

Imaging Scleroderma: What the Radiologist Needs to Know about

PURPOSE/AIM
To review the main pathophysiology changes of scleroderma and its common and uncommon imaging findings in the lung, cardiovascular system, digestive tract and musculoskeletal system.

CONTENT ORGANIZATION

SUMMARY
Scleroderma is a multi-system autoimmune connective tissue disorder, affecting multiple organ systems. Radiologist should know scleroderma manifestations in different imaging modalities in order to achieve accurate diagnosis and staging of disease that help clinicians to better manage those patients.

Computer-aided Tumor Burden Quantification of Mesothelioma for Assessment of Therapy Response: Comparison with Modified RECIST for Therapy Response
Imaging-based Criteria for Assessment of Therapy Response-Current Approaches and Challenges

LL-MSE2679
Amir Imanzadeh, MD
Anand K Singh, MD
Parul Penkar, MBBS
Garry Choy, MD, MS
Sanjay Saini, MD
Gordon J Harris, PhD *

PURPOSE/AIM
1. To discuss the current imaging-based response assessment criteria’s for Mesothelioma. 2. Provide an overview of fundamentals and effectiveness of computer-aided detection (CAD) techniques and possibilities for quantification of various presentations of pleural tumors with emphasis on modified RECIST criteria for Mesothelioma in assessing therapy-response and evidence-based support.

CONTENT ORGANIZATION
1. Pre-requisites for Computer-Aided Detection of Mesothelioma’s and considerations with pattern of tumor growth.
3. An evidence based overview: Comparison of pretreatment and post treatment 3-D segmentations with RECIST-based measurements.

SUMMARY
The imaging presentation of malignant mesothelioma can be considerable variable given the pattern of growth in these pleural tumors along the inner chest-wall that has necessitated modifications to current RECIST criteria. This exhibit will provide the viewer with explanations of such modifications along with preliminary data findings emphasizing the effectiveness of CT-based computer-aided quantification of mesothelioma burden in assessment of therapy response over currently used imaging criteria’s.

Imaging-based Criteria for Assessment of Therapy Response-Current Approaches and Challenges

LL-MSE2680
Bhushan Desai, MD
James Yoon, MD

PURPOSE/AIM
1. To summarize various radiological treatment response criteria based on either morphologic, functional or metabolic changes post targeted systemic therapy. 2. To highlight advantages and limitations of these imaging-based treatment assessment criteria. 3. To serve as training guidelines for radiologists.

CONTENT ORGANIZATION
I. Tumor size measurement
   a) WHO
   b) RECIST 1.0
   c) RECIST 1.1 II. Tumor enhancement/attenuation evaluation
   a) Modified RECIST criteria – Hepatocellular carcinoma (HCC)
   b) Choi criteria – Gastrointestinal stromal tumors (GIST)
   c) European Association for the Study of the Liver (EASL) – HCC
   d) Size and Attenuation correction (SACT), Morphology, attenuation, size and structure (MASS) – Renal Cell Carcinoma III. Response assessment based on evaluation of tumor heterogeneity IV. Functional / Metabolic Imaging criteria
   a) EORTC
   b) PERCIST V. MDA criteria for bone metastases VI. Chenson criteria for malignant lymphomas VII. Response criteria based on Perfusion Imaging

SUMMARY
1. Imaging biomarkers which can quantitatively, accurately and reproducibly predict tumor response can serve as surrogate endpoints in clinical trials.
2. Novel response criteria which integrate information provided by diverse imaging modalities are required in this era of molecular and personalized medicine.

Endoluminal Receiver Coil for Intravaginal, Endoanal and Endorectal Placement on 1.5 T and 3.0 T MRI Systems: Design, Technical Aspects and Clinical Application. Prototype Design of a Rigid Endorectal Coil Especially for Dedicated Prostate Imaging

LL-MSE2681
Roy S Dwarkasing, MD
Herman Flick, PhD *
Gyula Kotek, PhD
Gabriel P Krestin, MD, PhD *

PURPOSE/AIM
To describe the technical design of currently available endoluminal surface coils for placement in the anus, rectum or vagina. In addition, clinical indications for use of these coils will be explained, with illustration of actual cases and pitfalls on 1.5 T and 3.0 T MR systems.

CONTENT ORGANIZATION
• Technical design of currently available endoluminal coils
• Clinical indications for use of these coils
• Advantage of endoluminal coil use over pelvic phased array
• Pitfalls with endoluminal coil application.
• Proposal of a new rigid coil design for endorectal application with special focus on prostate imaging.

SUMMARY
Our center has solid clinical experience with the use of rigid endoluminal coils on 1.5 T and 3.0 T MR systems. These coils are custom build and based on a two channel loop design with a purely circular RF field. These have been used for placement in the anus or vagina with excellent results especially for imaging of perianal fistula disease, sphincter defects, female urethral- and perirectal disease. In addition, a prototype of a rigid endoluminal coil for endorectal application will be demonstrated with big user potential for prostate imaging. Other potential indications include subtle endorectal lesions (e.g. T1, T2 and early T3 rectal cancer).

Parasites Inside the Body, How Long Can They Remain Hidden?

LL-MSE2682
Vishal N Bakare, MD

PURPOSE/AIM
• To study various important parasites which invade the human body
• To study role of CT and MRI in accurate diagnosis of these parasitic infestations to guide management and prevent complications
• To have follow up of patients to help improve diagnostic skills

CONTENT ORGANIZATION
**SUMMARY**

Teaching Points in this exhibit are:

- Diseases caused by protozoan and helminth parasites are among leading causes of death and disease in tropical and subtropical regions of the world.
- The Common ones are Echinococcus (i.e. Hydatid disease), Ascarisis, Taenia solium (i.e. Cysticerccosis), Filariasis, Toxoplasmosis, Entamoeba, etc.
- There currently are no vaccines to prevent or control spread of parasitic diseases. Thus, control of these diseases depends heavily on proper diagnosis and availability of effective drugs to prevent complications.

**Whole Body MRI in Oncologic Patients: A Primer**

**LL-MSE2683**

**Wan-Lin Koh**, MBBS, FRCR  
**Jin Wei Kwek**, MBBS, FRCR

**PURPOSE/AIM**

1. To illustrate the oncologic applications of Whole body (WB) MRI in loco-regional and systemic staging, follow-up and evaluation of response to treatment.  
2. To review MRI protocols for specific cancers, and for specific patient groups.  
3. To illustrate the usefulness and pitfalls of WB-MRI in specific cancers.  
4. To illustrate the usefulness of WB DWI in detection and characterization of lesions.

**CONTENT ORGANIZATION**

1. Oncologic Applications of Whole Body MR Imaging  
2. WB-MRI Protocols for a. Combined Locoregional and Systemic Staging eg Prostate Cancer, Nasopharyngeal Cancer, Sarcoma etc b. Systematic Staging and Follow-up. Eg Lymphoma, Breast Cancer etc.  
c. Pregnant patients d. Patients with nephropathy e. Evaluation of Bony Metastases  
3. WB DW Imaging Protocols – Parameters, Usefulness and Pitfalls

**Catch A Wave~ A Doppler Ultrasound Quiz**

**LL-MSE2684**

**Timothy Singewald**, MD  
**Fiona Cassidy**, MD  
**Lejla Aganovic**, MD  
**Katherine M Richman**, MD

**PURPOSE/AIM**

Doppler ultrasound plays a pivotal role in the diagnosis of a wide range of pathologic entities affecting every organ system. The purpose of this quiz is to test knowledge of common and uncommon doppler findings, including iatrogenic phenomena and technical pitfalls.

**CONTENT ORGANIZATION**

Doppler ultrasound cases will be presented in quiz format with correlation with other imaging modalities. Discussion after each case will emphasize doppler waveform morphology and relationship to different disease entities, therapeutic devices, and technical artifacts. Cases will include the following: aortic stenosis/regurgitation; subclavian steal (partial/complete congestive heart failure); portal and extremity veins AVF/pseudoaneurysm; central venous thrombosis; ICA stenosis (pre and post stenotic waveforms and compensatory signs left ventricular assist device; artificial heart; portal venous gas; retained products of conception vs. uterine AVF or pseudoaneurysm; incorrect doppler settings causing aliasing artifact vs poor sensitivity to vascular flow.

**SUMMARY**

Doppler ultrasound is fast, inexpensive, and noninvasive. After completing this exhibit, the viewer should be familiar with many doppler findings, as well as how newer therapeutic devices and artifacts impact Doppler waveforms, thereby avoiding misinterpretation.

**Name That Syndrome: A Quiz-based Approach to the Various Abdominal Manifestations of Ten Clinical Syndromes**

**LL-MSE2685**

**Deepa Sheth**, MD  
**Aytekin Oto**, MD *

**PURPOSE/AIM**

Clinical syndromes in medicine can cause a variety of complex abnormalities that are influenced by the pathophysiologic characteristics of the underlying disease. In this exhibit, a systematic, quiz-based approach will be taken to outline the key imaging features, clinical relevance and management of ten clinical syndromes.

**CONTENT ORGANIZATION**

Ten clinical syndromes will be discussed including: Alagille syndrome, Hereditary Hemorrhagic Telangiectasia, Beckwith-Wiedemann syndrome, Carney's triad, Polyasplenia syndromes, Klippel-Trenauney syndrome, Tuberous Sclerosis, Peutz Jeghers syndrome, Hemangiomatosis syndrome and Gardner's syndrome. A quiz-based approach will be taken with each syndrome whereby the case will begin with key images. Each case will then be followed with a discussion addressing three objectives:

1. Recognize the main imaging appearance.
2. Describe the prevalence, genetics, clinical manifestations and management.
3. Discuss the diagnostic imaging pearls and a systematic approach to recognizing each syndrome.

**SUMMARY**

Clinical syndromes in medicine are often accompanied by complex, multi-systemic manifestations. This exhibit demonstrates how ten clinical syndromes and their imaging findings can be better understood through a systematic, quiz-based approach.
Inflammation. 4) Understand the appropriate utilization of imaging in infection and inflammation.

LEARNING OBJECTIVES
1) Revisar los principales hallazgos radiológicos de los procesos infecciosos e inflamatorios por órganos y sistemas.
2) Entender el papel de las diferentes modalidades de imagen en infección e inflamación.
3) Entender la utilización adecuada del diagnóstico por imágenes en procesos infecciosos e inflamatorios en el paciente con tuberculosis cerebral.
4) Diagnostic algorithm of Cerebral Tuberculosis.
5) Typical imaging pattern of Cerebral Tuberculosis.
6) Atypical imaging signs of Cerebral Tuberculosis.
7) Utility of Imaging to guide the treatment and to predict clinical outcome of patients with Cerebral Tuberculosis.

ABSTRACT

SPSP01D  •  System: Imaging Clues in Cerebral Tuberculosis

Gloria Soto Giordani

SPSP01B  •  Gloria Soto Giordani

SPSP01A  •  URL

LEARNING OBJECTIVES
View learning objectives under the main title.

SPSP01C  •  Miguel E Stoopen

LEARNING OBJECTIVES
View learning objectives under the main title.

SPSP01B  •  Miguel E Stoopen

LEARNING OBJECTIVES
View learning objectives under the main title.

SPSP01D  •  Pablo R Ros

LEARNING OBJECTIVES
View learning objectives under the main title.

ABSTRACT

Sergio Fernandez-Tapia MD, PhD (Presenter)

LEARNING OBJECTIVES
View learning objectives under the main title.

ABSTRACT

Sergio Fernandez-Tapia MD, PhD (Presenter)

LEARNING OBJECTIVES
View learning objectives under the main title.

ABSTRACT

Sergio Fernandez-Tapia MD, PhD (Presenter)
post-necrotic fluid collections, pseudocyst, and such as acute peripancreatic fluid collections, acute post-necrotic fluid collections, pseudocyst, and...
walled-off pancreatic necrosis are now recommended as they describe the evolution of fluid collections in patients with both interstitial and necrotizing pancreatitis and nonspecific terms such as pancreatic abscess and phlegmon are being abandoned. In this review we illustrate, with case examples, the standardized terminology used in the radiological and clinical description of acute pancreatitis, its severity, and complications with an emphasis on the role of computed tomography and magnetic resonance imaging. Different management options of the associated complications are also discussed. The use of standardized terminology will hopefully improve the communication between radiologists, gastroenterologists, and surgeons to facilitate treatment planning and will lead to enhanced outcomes for patients with acute pancreatitis as well as create uniformity for enrollment into research studies.

SPSP01K • Vías Urinarias: Pielonefritis y Absceso Renal/Urinary Tract: Pyelonephritis and Renal Abscess
Victor J Casillas MD (Presenter)

LEARNING OBJECTIVES
1) To describe the clinical presentation, etiology and radiographic imaging modalities to evaluate acute pyelonephritis and renal abscess.
2) To illustrate the imaging findings of these conditions.
3) To discuss the differential diagnosis and management.

ABSTRACT
Pelvic inflammatory disease (PID) represents inflammation of the upper genitalia and the adjacent pelvic region. The etiology is an infectious agent, but it is often never identified. Risk factors include young age, high frequency of partner change, lack of barrier contraception low socioeconomic group. The clinical presentation is pelvic pain, fever and leucocytosis. US is considered the initial imaging test of choice but CT is more accurate. The main findings in CT are: Small amount of fluid in the pelvis, fat stranding or increased attenuation of pelvic fat and pyosalpinx. Tuboovarian abscess appears as a complex fluid collection with thick enhancing walls, commonly bilateral. CT can be used as guidance for percutaneous drainage.

SPSP01L • Pelvis Femenina y Masculina: Enfermedad Inflamatoria Pélvica/Female and Male Pelvis: Pelvic Inflammatory Disease
Pablo Soffia MD (Presenter)

LEARNING OBJECTIVES
1) Discuss the optimal CT techniques for evaluating patients with suspected PID.
2) Recognize the CT findings commonly seen in early and advanced PID.
3) Discuss common and uncommon causes of PID.

ABSTRACT
Pelvic inflammatory disease (PID) represents inflammation of the upper genitalia and the adjacent pelvic region. The etiology is an infectious agent, but it is often never identified. Risk factors include young age, high frequency of partner change, lack of barrier contraception low socioeconomic group. The clinical presentation is pelvic pain, fever and leucocytosis. US is considered the initial imaging test of choice but CT is more accurate. The main findings in CT are: Small amount of fluid in the pelvis, fat stranding or increased attenuation of pelvic fat and pyosalpinx. Tuboovarian abscess appears as a complex fluid collection with thick enhancing walls, commonly bilateral. CT can be used as guidance for percutaneous drainage.

SPSP01M • Preguntas/Questions and Answers

SPSP01N • Clausura/Closing Remarks

Opening Session
Sunday, 08:30 AM • Arie Crown Theater

PS10 • AMA PRA Category 1 Credit ™: 1.75 • ARRT Category A+ Credit: 1
To receive credit, relinquish attendance voucher at end of session.

Presiding
Sarah S Donaldson , MD , Palo Alto, CA
President, Radiological Society of North America

Greetings
John D Hazle , PhD , Houston, TX
President, American Association of Physicists in Medicine
Joy S Sclamberg , MD , Deerfield, IL
President, Chicago Radiological Society

Presentation of the Outstanding Educator Award
Bruce G Haffty , MD , New Brunswick, NJ
Recipient

Presentation of the Outstanding Researcher Award
Norbert J Pelc , ScD *, Stanford, CA
Recipient

Dedication of the 2013 RSNA Meeting Program to the Memory of David H. Hussey, MD (1937-2013), and Philip E.S. Palmer, MD (1921-2013)
Sarah S Donaldson , MD , Palo Alto, CA

President’s Address: The Power of Partnership
Sarah S Donaldson , MD , Palo Alto, CA
Introduction by
Richard T Hoppe , MD , Palo Alto, CA
First Vice President, Radiological Society of North America

LEARNING OBJECTIVES
In the current healthcare environment, radiologists must reexamine their traditional expectations, attitudes, and behaviors so as to embrace a requisite change in culture that builds partnerships throughout radiology, the general medical community, and the larger community of patients and families. This address illustrates the perils of technology that have unintentionally fragmented radiology

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and radiologists. Yet in this current era of precision imaging and therapy, we find natural partnerships throughout the radiologic community. Within the general medical community, multi-disciplinary team medicine mandates visibility of the radiologist, who must accept responsibility for patient care beyond rapid communication of imaging results. Team-based practice promotes collaborative clinical and research programs, augments one’s expertise, and builds careers. Professional interdependence promotes innovation and adds value to our collective endeavors. However, our most important partners are the patients we serve. When we commit ourselves to focusing on their care and becoming their partners, they will come to understand our contribution to diagnosis and treatment, and will become our advocates. The physician / patient bond that is well developed in oncology serves as a model for all of radiology, and confirms the gratifications that come from being a patient-oriented radiologist.

Annual Oration in Diagnostic Radiology: We Must Stand on the Shoulders of Giants

Damian E Dupuy, MD *, Providence, RI
Introduction by
Matthew A Mauro, MD *, Chapel Hill, NC
Chairman, Scientific Program Committee

LEARNING OBJECTIVES
Over the past 50 years the field of Radiology has undergone incredible growth that has led to greater diversity and sub-specialization. A clear division between Radiation Oncology and Diagnostic Radiology was made in the early 1970s and since that time each has become even more complex and sub-specialized. Within Radiology, the subspecialty of Interventional Radiology has emerged as a unique entity similar to the demarcation between Radiology and Radiation Oncology over 40 years ago. The newly approved dual Interventional Radiology (IR) and Diagnostic Radiology (DR) primary certificate for resident education emphasizes that IR is distinct in its incorporation of diagnostic imaging, image-guided procedures and patient care. Radiology and Interventional Oncology share a strong focus on cancer detection and diagnosis, tumor staging, locoregional therapy and treatment follow-up. Both specialties are vitally important to patients during their cancer treatment and should strive for collaboration to optimize patient care. Despite their mutual goals and complementary skill sets, many Radiology and Radiation Oncology Departments struggle to be autonomous and are at times in direct competition for both hospital resources and patients. In the new health care paradigm where evidence-based medicine (e.g. cost and quality) becomes a more important determinant of treatment decision-making, a cohesive team approach to cancer care makes the most economic sense. According to an American College of Radiology survey of United States Radiology and Radiation Oncology practices in 2008, most practices from both specialties preferred a large multi-specialty group practice either within or separate from an academic medical center. This is no surprise given the growth of medical knowledge and technical innovation that our specialties have benefited from. It is becoming more difficult for smaller groups to maintain state of the art specialization within their respective fields. Radiology groups, on average, are almost three times the size of Radiation Oncology practices. It behooves these departments to reach a stronger axis of collaboration given the shared common interests and marked synergies that are evident in the outcomes these cancers experience. Advanced imaging technology provides radiation oncologists with more accurate tumor targeting, reducing the need for chemotherapy and the need for tumor staging at baseline. Radiation oncologists have been at the forefront of developing techniques that provide more precise localization for stereotactic body radiotherapy techniques and higher local radiotherapy boosts for recurrent local cancers, respectively. Advanced imaging technology provides radiation oncologists with more accurate tumor targeting, thus reducing toxicity to adjacent normal and critical tissues. Combination therapies with external beam radiotherapy or brachytherapy and thermal ablation techniques have shown synergistic effects with promise for improved local control in larger tumors. Intraarterial radioembolics with 90Yttrium embolic agents utilize beta particles to destroy regional cancer of the liver. Newer non-ionizing techniques such as high intensity focused ultrasound can provide stereotactic like thermal destruction of soft tissue tumors; exciting new preliminary results have shown potential in bone cancer, breast cancer and prostate cancer. Radiation oncologists have great expertise at treatment planning with ionizing radiation. This experience has come from decades of research as well as technical advances in computer science and photon delivery. Concurrently, radiologists who target tumors with ablative techniques have begun to realize the great need for 3-dimensional treatment planning. The time has come for a reunification of spirit as well as intellect. Our patients and the medical community will reap the benefits of a stronger collaboration. As Isaac Newton said, If I have seen further than others, it is by standing upon the shoulders of giants.

Multisystem/Special Interest - Sunday Posters and Exhibits (12:30pm - 1:00pm)

SUNDAY, 12:30 PM - 01:00 PM • Lakeside Learning Center

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LL-MSE-SUA • AMA PRA Category 1 Credit™:0.5

LL-MSE-S6A • Pitfalls in RECIST Data Extraction for Cancer Clinical Trials: Lessons Learned from a Quality Improvement Review of a Cancer Imaging Support Laboratory

Richard G Abramson MD (Presenter) * ; Carrie R McGhee RT
PURPOSE/AIM
To illustrate common pitfalls encountered by radiologists extracting tumor measurement data for cancer clinical trials using RECIST 1.1.

CONTENT ORGANIZATION
Review of RECIST 1.1 Methodology Common errors and pitfalls in RECIST data extraction: -- Errors in selecting target lesions at baseline (example: comparison made to most recent prior, rather than study baseline) -- Errors in assessing new lesions (example: new lesion called prematurely, before unequivocal) Practical tips for performing RECIST data extraction for clinical trials

SUMMARY
Major teaching points: (1) RECIST tumor measurement forms stand alone as independent documentation of a patient’s course while on a clinical trial (2) Accuracy is paramount, as tumor measurement data are used for computing composite study endpoints such as response rate and median time to progression (3) RECIST guidelines can minimize but not completely eliminate subjective interpretation (4) Readers can achieve greater accuracy and uniformity by adhering to certain best practices

Multisystem/Special Interest - Sunday Posters and Exhibits (12:30 - 1:00 PM)

SUNDAY, 01:00 PM - 01:30 PM • Lakeside Learning Center

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LL-MSE-SUB • AMA PRA Category 1 Credit™:0.5

LL-MSE-S6B • Retrospective Evaluation of the Clinical Role of Whole-Body Diffusion-weighted MRI in 1000 Cancer Patients

Tran Seaton FRCR (Presenter) ; Kathryn L Tran MBBS ; Andrew Gogbashian MD, FRCR ; Anwar R Padhani MD *
PURPOSE/AIM
Whole-body diffusion-weighted imaging (WB-DWI) is an emerging technique whose role in clinical practice is not well defined. We analyzed the 1st 1000 of 1700 WB-DWI studies done at a tertiary cancer center to assess its utility in the management of cancer patients.

Annual Oration in Diagnostic Radiology: We Must Stand on the Shoulders of Giants

Damian E Dupuy, MD *, Providence, RI
Introduction by
Matthew A Mauro, MD *, Chapel Hill, NC
Chairman, Scientific Program Committee

LEARNING OBJECTIVES
Over the past 50 years the field of Radiology has undergone incredible growth that has led to greater diversity and sub-specialization. A clear division between Radiation Oncology and Diagnostic Radiology was made in the early 1970s and since that time each has become even more complex and sub-specialized. Within Radiology, the subspecialty of Interventional Radiology has emerged as a unique entity similar to the demarcation between Radiology and Radiation Oncology over 40 years ago. The newly approved dual Interventional Radiology (IR) and Diagnostic Radiology (DR) primary certificate for resident education emphasizes that IR is distinct in its incorporation of diagnostic imaging, image-guided procedures and patient care. Radiology and Interventional Oncology share a strong focus on cancer detection and diagnosis, tumor staging, locoregional therapy and treatment follow-up. Both specialties are vitally important to patients during their cancer treatment and should strive for collaboration to optimize patient care. Despite their mutual goals and complementary skill sets, many Radiology and Radiation Oncology Departments struggle to be autonomous and are at times in direct competition for both hospital resources and patients. In the new health care paradigm where evidence-based medicine (e.g. cost and quality) becomes a more important determinant of treatment decision-making, a cohesive team approach to cancer care makes the most economic sense. According to an American College of Radiology survey of United States Radiology and Radiation Oncology practices in 2008, most practices from both specialties preferred a large multi-specialty group practice either within or separate from an academic medical center. This is no surprise given the growth of medical knowledge and technical innovation that our specialties have benefited from. It is becoming more difficult for smaller groups to maintain state of the art specialization within their respective fields. Radiology groups, on average, are almost three times the size of Radiation Oncology practices. It behooves these departments to reach a stronger axis of collaboration given the shared common interests and marked synergies that are evident in the outcomes these cancers experience. Advanced imaging technology provides radiation oncologists with more accurate tumor targeting, reducing the need for chemotherapy and the need for tumor staging at baseline. Radiation oncologists have been at the forefront of developing techniques that provide more precise localization for stereotactic body radiotherapy techniques and higher local radiotherapy boosts for recurrent local cancers, respectively. Advanced imaging technology provides radiation oncologists with more accurate tumor targeting, thus reducing toxicity to adjacent normal and critical tissues. Combination therapies with external beam radiotherapy or brachytherapy and thermal ablation techniques have shown synergistic effects with promise for improved local control in larger tumors. Intraarterial radioembolics with 90Yttrium embolic agents utilize beta particles to destroy regional cancer of the liver. Newer non-ionizing techniques such as high intensity focused ultrasound can provide stereotactic like thermal destruction of soft tissue tumors; exciting new preliminary results have shown potential in bone cancer, breast cancer and prostate cancer. Radiation oncologists have great expertise at treatment planning with ionizing radiation. This experience has come from decades of research as well as technical advances in computer science and photon delivery. Concurrently, radiologists who target tumors with ablative techniques have begun to realize the great need for 3-dimensional treatment planning. The time has come for a reunification of spirit as well as intellect. Our patients and the medical community will reap the benefits of a stronger collaboration. As Isaac Newton said, If I have seen further than
RSNA Educational Programs Around the World: An International Forum (Sponsored by the RSNA Committee on International Radiology Education)

Sunday, 02:00 PM - 03:30 PM • S102D

LEARNING OBJECTIVES
1) To familiarize the learner with the existing RSNA educational programs in other countries. 2) To discuss the past activities of RSNA in other countries in improving knowledge of radiology and application of latest technical radiology innovations. 3) To receive feedback from representatives of four selected countries (Nigeria, South Africa, Egypt and Thailand) on the impact of the RSNA educational programs both on a personal and national level.

ABSTRACT
This refresher course presents a summary of the existing RSNA educational programs around the world: International Visiting Professor (IVP) program, Derek Harwood Nash (DHN) fellowship, Introduction to Research for International Young Academics (IRIYA) and Educational Material and Journal awards (EMJA) program. These programs address radiology education in many levels: junior radiologist (IRIYA) the more senior radiologist (DHN), the institution (EMJA) and the national radiology organizations (IVP). RSNA committee members familiar with the programs will discuss the history and unique features of each that make them ideal for international outreach initiatives. Four international representatives from Nigeria, South Africa, Egypt and Thailand will provide feedback on how the various programs have impacted radiology education and practice in their country as a whole and the personal careers of those who participated in the DHN or IRIYA programs. A panel discussion will then be conducted at the end of the session to explore other educational opportunities and future directions that will maximize the resources provided by the RSNA.

Extranodal Lymphoma from Head to Toe (In Conjunction with the American Institute for Radiologic Pathology)

Sunday, 02:00 PM - 03:30 PM • S403B

LEARNING OBJECTIVES
1) Describe the typical clinical and pathologic features of extranodal lymphoma. 2) Define the characteristic imaging patterns of extranodal lymphoma. 3) Identify the pathologic and imaging manifestations of lymphoma in immunocompromised patients and their variation from lymphoma occurring in immunocompetent individuals. 4) Understand the pathologic basis for the imaging patterns of extranodal lymphoma.

ABSTRACT
-Whole-body diffusion weighted imaging (WB-DWI) technique -Potential advantages over current imaging modalities including PET -Experience of WB-DWI in our cohort -- General clinical indications (1000 studies total) - Experience in breast cancer (587 studies) -Experience in multiple myeloma (140 studies) -Experience in prostate cancer (109 studies) -other tumor types (including renal cancer, melanoma and lymphoma) *Presentation of representative WB-DWI images from our cohort *Discussion of clinical utility as tool for staging, response assessment, re-staging and surveillance -Reflection of future development roles of WB-DWI

SUMMARY
The main teaching points of this exhibit are: - To educate delegates on how to introduce and incorporate WB-DWI into clinical practice - To present our practical experience of how WB-DWI studies are used in the clinical management of cancer patients -To show that its key role is in the detection and management of bony disease ◆ an area of unmet clinical need

Report of the RSNA Research and Education Foundation

James P Borgstede, MD, Denver, CO
Chairman, Board of Trustees, RSNA Research and Education Foundation

LEARNING OBJECTIVES
The RandE Foundation ◆ A Powerful Partner 2013 was an outstanding year for the RSNA Research and Education Foundation. This success is due in large part to the support of our many loyal and committed partners. The theme of the 2013 Annual Meeting and Scientific Assembly is ◆ The Power of Partnership ◆ and RandE Foundation donors are truly our partners in funding radiology’s future. Individual donors, private practice and academic group supporters, and our corporate colleagues all play an integral role in the RandE Foundation. Through their incredibly generous support, the RandE Foundation was able to fund 85 grants totaling over $3 million ◆ the highest amount awarded in the Foundation’s history. The work of the Foundation’s grant recipients would be impossible without the supportive partnership of the countless academic departments and their leaders. These leaders encourage investigators to apply
for RandE funding and then generously yield protected time for their research. The mission of the RandE Foundation is to advance radiologic research, education and practice, and the bedrock of radiologic research is the RandE Foundation. Since its inception, the Foundation has awarded over $40 million to nearly 1000 educators and investigators. An RandE grant is a pathway to greater funding from sources such as the NIH, and in the RandE Foundation’s brief history, the Foundation has enabled over $1 billion in radiologic research. A partnership with the RandE Foundation means that critical funding is being directed to young and seasoned investigators during all stages of their careers, thus ensuring that our specialty stays at the forefront by investing in the researchers and scholars who are driving the advances in radiological sciences. The recipients in the RandE class of 2013 are performing research in a number of different subspecialty areas using many modalities and techniques. Their promising projects have clinical and translational implications that will most certainly move our specialty forward. The ongoing partnership with the RandE Foundation and the RSNA is evidenced by the number of past grant recipients presenting at the Annual Meeting. Whether a plenary session, refresher course, scientific session or education exhibit, this continuing commitment by RandE grant recipients is both steadfast and worthy of note. During the meeting week, please take time to visit the RandE Foundation Booth, located on Level 3 of Lakeside Center to learn more about our outstanding grant recipients, their innovative projects and the many available opportunities to support the RandE Foundation and the future of our specialty.

Image Interpretation Session

Moderator
Gerald D Dodd, MD, Aurora, CO

Introduction by
Donald P Frush, MD, Durham, NC

Chairman, Refresher Course Committee

Panel
David A Lynch, MBCh, Denver, CO
Riccardo Manfredi, MD, Verona, Italy
Debra L Monticciolo, MD, Temple, TX
Michael J Tuite, MD, Verona, WI
David M Yousem, MD, Owings Mills, MD

LEARNING OBJECTIVES
1) Identify key abnormal findings on radiologic studies that are critical to making a specific diagnosis. 2) Construct a logical list of differential diagnoses based on the radiologic findings, focusing on the most probable differential diagnoses. 3) Determine which, if any, additional radiologic studies or procedures are needed in order to make a specific final diagnosis. 4) Choose the most likely diagnosis based on the clinical and the radiologic information.

Global Health: Radiology in Haiti (Sponsored by the Associated Sciences Consortium) (An Interactive Session)

Monday, 08:30 AM - 10:00 AM • S105AB

MSAS21 • AMA PRA Category 1 Credit ™:1.5 • ARRT Category A+ Credit:1.5
Moderator
Michael D Ward, PhD

MSAS21A • Radiology in Haiti: Challenges and Rewards in a Third World Country
Barbara A Tomasini RT(R) (Presenter)

LEARNING OBJECTIVES
1) Participants of this lecture will learn that Radiology technology is obtainable in underdeveloped countries. How to achieve sustainability of a successful radiology program is discussed and key points are outlined.; How to obtain technology to meet the infrastructure of an underdeveloped country for long-term sustainability are presented. 2) The importance of Radiology technology in underdeveloped countries is shown and how it enhances the healthcare delivery system of the underdeveloped country once implemented. 3) Critical thinking skills with a passion to help in underdeveloped countries is a positive option for radiographers. Ongoing education in these countries is necessary to optimize the high standard of care radiographers deliver in their own work environments.

MSAS21B • Radiology in Haiti: Disaster Victim Identification in Post-Earthquake Haiti
James B Temme RT (Presenter)

LEARNING OBJECTIVES
1) Describe the purpose of a Disaster Mortuary Operational Response Team (DMORT) during the aftermath of a National Disaster. 2) Identify and discuss the general roles of the key individuals that participate in a DMORT facility. 3) Identify and describe the specific duties of a Forensic Radiographer and the radiographic equipment utilized in a DMORT facility. 4) Describe the problems of obtaining radiographic images of victim remains after a natural catastrophic disaster.

ABSTRACT
The 2010 earthquake devastated the city of Port au Prince, Haiti, leaving at least 230,000 dead, 200,000 injured and 1 million homeless. The aftermath overwhelmed the Haitian government of this third world country. Massive aid poured into Haiti from many countries, including the USA. Many of the dead were United States citizens who needed to be recovered and identified. To help in the process of recovering the remains of American citizens, DMORT, a unit of the National Disaster Medical System (NDMS) was deployed. DMORT’s role in Haiti, the interdisciplinary team members and their responsibilities with specific emphasis on the role of the Radiographer will be discussed. The difficulties posed in performing this type of US government operation in a foreign country in the immediate aftermath of a natural disaster are presented.

Compensation Plans

Monday, 08:30 AM - 10:00 AM • N228

RC232 • AMA PRA Category 1 Credit ™:1.5 • ARRT Category A+ Credit:1.5
Ronald L Arenson, MD
Pablo R Ros, MD, PhD*
Vincent P Mathews, MD *

LEARNING OBJECTIVES
1) Understand the need to offer incentive compensation (bonus) to faculty in Academic Radiology Departments. 2) To be able to describe the advantages and disadvantages of productivity only incentive plans in Academic Radiology. 3) Understand methods of providing incentives other than clinical productivity. 4) Understand how to insure fairness and a feeling of working as a team with incentive-based compensation plans. 5) Understand how incentive systems used by private practices are different from that of an Academic Radiology Department. (This course is part of the Leadership Track)
Whole body Diffusion Weighted Imaging in Hematologic Malignancies

Alain Luciani MD, PhD (Presenter) *; Emmanuel Itti MD; Alain Rahmouni MD

Whole body diffusion-weighted imaging (DWI) has become an integral tool for the evaluation of cancer patients. The high concentration of the active compounds delivered via the hepatic artery is able to detect microscopic tumor foci in the liver. Diffusion-weighted imaging has been shown to have high diagnostic value in the detection of liver metastases, particularly in the early detection of colorectal cancer liver metastases (CRLM) and hepatocellular carcinoma (HCC). Diffusion-weighted imaging has also been shown to be useful in the assessment of tumor heterogeneity, which is typically not practical. In order to optimize tissue sampling, molecular imaging can provide a more complete insight into living tumors. The ability of PET/CT to demonstrate malignancies, which are not visible on anatomic images, increases the number of malignancies applications.

Discussion and conclusion:

- WB-MRI can allow combination of morphologic and functional data on a whole body scale.
- The use of whole-body MRI can improve the detection of malignancies, particularly in the liver and other organs.
- The high concentration of the active compounds delivered via the hepatic artery is able to detect microscopic tumor foci in the liver.
- Diffusion-weighted imaging has been shown to have high diagnostic value in the detection of liver metastases, particularly in the early detection of colorectal cancer liver metastases (CRLM) and hepatocellular carcinoma (HCC).
- Diffusion-weighted imaging has also been shown to be useful in the assessment of tumor heterogeneity, which is typically not practical. In order to optimize tissue sampling, molecular imaging can provide a more complete insight into living tumors.

For CRLM, HAIC is used as an induction therapy in patients with unresectable liver metastases. With the goal of high morphologic response rates when compared with the same therapy used intravenously. For CRLM, HAIC is used as an induction therapy in patients with unrespectable liver metastases. With the goal of high morphologic response rates when compared with the same therapy used intravenously. For CRLM, HAIC is used as an induction therapy in patients with unrespectable liver metastases. With the goal of high morphologic response rates when compared with the same therapy used intravenously. For CRLM, HAIC is used as an induction therapy in patients with unrespectable liver metastases. With the goal of high morphologic response rates when compared with the same therapy used intravenously.
improvement in TACE includes recent advances in delivery platform an imaging guidance. Drug eluting beads have been demonstrated in a experimental models to increase concentration of drug in tumor [4], and have a potential benefit over drug alone. The ideal size of beads and the ideal agent to load on beads are still under investigation. It is noteworthy that the survival reported for HCC and NELM patient treated with TACE is improved in recent publication, probably as a consequences of this technical improvement and better patient selection.

Further randomised trials are needed to evaluate the real benefit of intra-arterial therapies to patient survival and to define what is the best technique of HAIC or TACE. REFERENCES

SSC17-05 • Colorectal Liver Metastases: Role of the Radiologist in the Multidisciplinary Team

Valerie Vilgrain MD (Presenter); Mohamed Abdel-Rehim MD; Maxime Ronot MD; Magaly Zappa MD; Annie Sibert MD

Abstract France Presents
There are various treatments for liver metastases from primary colorectal cancer including surgical resection, non surgical ablative treatments, and chemotherapy. Yet, surgical resection with perioperative chemotherapy has been shown to be the best treatment option for cure in these patients.

Therefore the role of the Radiologist in the Multidisciplinary Team is key and can be splitted in four topics: 1) diagnosis of liver lesions as liver metastases, 2) prehepatic staging including nodal metastases, peritoneal implants, regional or local recurrent or residual disease, and pulmonary metastases, 3) intrahepatic staging which aims to define number and extent of liver metastases in the segmental and lobar distribution in order to evaluate surgical resectability or feasibility of non surgical ablative treatments, 4) and eventually response to chemotherapy or without targeted therapy.

Multimodal imaging is needed to answer all these questions. The most important imaging modalities are CT, MR imaging and PET. Multidetector CT is particularly helpful for whole body investigation and anatomic information for surgical planning. MR imaging is better than CT for lesion detection and lesion characterization in the liver in particular with diffusion-weighted images and sequences using liver-specific agents. Pretherapeutic and intraoperative contrast-enhanced ultrasound may complete the work-up.

SSC17-06 • Closing Remarks
Richard L Baron MD (Presenter); Jean-Pierre Pruvo MD, PhD (Presenter); Nicolas Grenier MD (Presenter)

Multisystem/Special Interest - Monday Posters and Exhibits (12:15-12:45pm)

Monday, 12:15 PM - 12:45 PM • Lakeside Learning Center

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LL-MSE-MOA • AMA PRA Category 1 Credit ™:0.5

SSC17-07A • Many Different Faces of Graft versus Host Disease: Radiology-pathology Case Based Review

Ammar A Chaudhry MD (Presenter); Maryam Gul; Abbas A Chaudhry BSc; Jason Z Eisenberg MD; Sandy A Itwaru; Nabil Tahan MPH, BS; Marlene L Zawin MD; Jared Dunkin MD; Almas Abbasi MBBS

PURPOSE/AIM
Case based review of acute and chronic GVHD involving the brain, spine, thoracoabdominal viscera and musculoskeletal system with radiology-pathology correlation.

CONTENT ORGANIZATION
Multiple different presentations of graft versus host disease will be shown involving the brain, spine, thoracoabdominal viscera and musculoskeletal system. We will discuss cases of similar appearing tumors (lymphoma, sarcomas,etc), infection, inflammation, and/or injury with an emphasis on key findings differentiating these entities. Radiology-pathology correlation of all the presented entities will be discussed as well.

SUMMARY
1- GVHD is a significant complication of BMT that can involve various organs.
2- Although GVHD carries a broad differential diagnosis, it can be narrowed utilizing age, clinical features, radiologic imaging characteristics (e.g. Location, enhancement pattern, necrosis, gradient signal on MRI, etc) and pathology correlation.
3- By the conclusion of this presentation, the radiologist and clinicians should have a better understanding of various clinical presentations of GVHD and associated imaging findings. What the radiologist needs to know, what should be conveyed in the radiology/endoscopy report and recommended to the clinician. At the end, the viewer should also be able to aid in the workup, guide any potential biopsy and imaging follow-up.

Multisystem/Special Interest - Monday Posters and Exhibits (12:45-1:15pm)

Monday, 12:45 PM - 01:15 PM • Lakeside Learning Center

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LL-MSE-MOB

LL-MSE-MO6B • Point Counter Point: Controversies in Imaging the Abdomen in a Pregnant Patient

Jessica C Germino MD; Puneet Bhargava MD (Presenter); Ramit Lamba MD; Mariam Moshiri MD; Chandana G Lall MD; Douglas S Katz MD; Neeraj Lalwani MD; Sadhana Verma MD *

PURPOSE/AIM
1. Radiation exposure to a pregnant or potentially pregnant patient for an imaging procedure is often unavoidable. 2. Reviewing various guidelines and understanding the variability will help radiologists plan imaging workup based on a specific clinical scenario and appropriately use modalities employing ionizing radiation and radiologic contrast.

CONTENT ORGANIZATION

SUMMARY
At the end of the exhibit the reader will have better knowledge of safe approaches to imaging the abdomen in a pregnant patient and will be able to confidently protocol studies to provide timely and effective medical care.
LL-MSE-MO7B • 3D Ultrasound Applications in Abdominal Imaging
Susan J Frank MD (Presenter) ; Tova C Koenigsberg MD ; Mordecai Koenigsberg MD

PURPOSE/AIM
1. Present some of the uses of 3D ultrasound in the abdomen utilizing both grey scale and color Doppler imaging, including imaging of liver and renal transplant vascular anastomoses, TIPS shunts, renal lesions, and imaging of the biliary tree, including choledochal cysts and focal gallbladder wall abnormalities. 2. Review published literature on 3D ultrasound of the abdomen.

CONTENT ORGANIZATION

SUMMARY
3D ultrasound has proven useful in many gynecological and obstetric applications. There is a gap in the literature regarding its usefulness in abdominal imaging. It has the potential to create an ultrasound exam which is less operator dependent, faster, and which has reconstruction capabilities similar to other cross sectional imaging modalities. We present the 3D ultrasound appearance of a variety of abdominal processes, and explore the ways in which it complements 2D ultrasound imaging.

Estate Planning in Our New Tax Environment

Monday, 03:00 PM - 05:30 PM • E253AB

SPEP21 • CME :CME credit is not available for this session.
Alicia K Waltenberger

LEARNING OBJECTIVES
1) Fundamentals of conventional estate planning for any financial situation. 2) Planning strategies for retirement needs, Roth conversions, and charitable gifts. 3) Sophisticated strategies to leverage taxable gifts and transfer wealth to lower generations.

ABSTRACT
It is important to understand the fundamentals of estate planning and the importance of having a solid plan in place regardless of your financial situation. The desire to be tax efficient and keep up with the changing tax environment can sometimes feel like an insurmountable feat. In this seminar, we will explore a number of issues in the financial and tax planning arena including:
- Retirement Needs Analysis reviewing your income sources and anticipated expenses in retirement and analyzing what effect the changing income tax environment has on your financial plan;
- Roth Conversions an analysis of whether a Roth conversion is a smart move, unwise or much ado about nothing;
- Estate Planning Basics a review of estate planning fundamentals, including a look at conventional estate planning strategies and how the changes in the estate tax laws may impact that conventional planning;
- Sophisticated Planning Strategies - there are various planning techniques available to leverage taxable gifts, allowing wealth to be funneled to lower generations on a tax-advantaged basis both during lifetime and at death;
- Non-Tax Related Planning a look at how family dynamics, asset protection and state tax issues may impact the estate plan; and
- Charitable Planning identifying the types of gifts and giving techniques that offer the greatest tax benefit to donors both during lifetime and at death.

In addition to comprehensive discussion outlined above, the session will include ample opportunity for QandA.

Change Management in Radiology

Tuesday, 08:30 AM - 10:00 AM • S404CD

RC332 • AMA PRA Category 1 Credit ™:1.5 • ARRT Category A+ Credit:1.5
Michael N Brant-Zawadzki , MD
William T Thorwarth , MD
N. Reed Dunnick , MD

LEARNING OBJECTIVES
1) Participants will appreciate the importance of understanding the culture of an organization. 2) Participants will understand that strategic planning will not result in a successful outcome if it is not consistent with the culture of the organization. 3) Participants will learn techniques that can help modify organizational culture and make it more effective in addressing new issues. (This course is part of the Leadership Track)

ABSTRACT
Culture may be defined as the behaviors and beliefs of a social, ethnic or age group. It is the set of shared attitudes, values, goals and practices that characterize the group. Understanding the culture of our professional organizations is essential to effectively creating and implementing a strategic plan. Each of us is involved in many organizations including private practice groups, multispecialty clinics, university departments and a variety of professional societies which are linked by common interests. These include a interests related to a specific geographic region, an anatomic organ system, or an imaging or therapeutic modality. They may also be connected to a common interest such as education, research, reimbursement, regulation, government affairs, or radiology administration.

The pace of change in our society is quickening. This is true not only for communication and imaging technology, but also for the entire health care industry and the regulations that govern our behavior. American medicine has been criticized for being too expensive and having only average quality. Furthermore, a large number of unnecessary deaths have been attributed to medical error. If our field is going to respond effectively to these many challenges, we must understand the cultures of our various professional organizations in order to enable them to better implement needed responses.

Process Engineering to Optimize Work Flow Processes in Radiology: A Case Study Approach (Sponsored by the Associated Sciences Consortium) (An Interactive Session)

Tuesday, 01:30 PM - 03:00 PM • S105A

MSAS33 • AMA PRA Category 1 Credit ™:1.5 • ARRT Category A+ Credit:1.5
Moderator
William A Undie , PhD, RT

MSAS33A • Improving Patient Experience Through Technology
Carolyn C Meltzer MD (Presenter) * ; Habib Tannir MS (Presenter)

LEARNING OBJECTIVES
1) How to produce patient education videos. 2) How to deploy them in a patient care setting. 3) How to measure the impact on patient satisfaction.
MSAS33B • Designing a New Imaging Center: The Production Preparation Process (3P) - An Innovative Lean Approach

Kristina R Givens BS (Presenter)

LEARNING OBJECTIVES
1) Gain an understanding of the Production Preparation Process, its basic elements and tools. 2) Explore a successful Imaging Center Case Study. 3) Review the benefits, challenges and lessons learned by LandM.

ABSTRACT
The focus of this session will be on the successful design of Lawrence and Memorial Hospital’s new Imaging Center. Given the massive capital investment required in healthcare facility construction, hospitals must develop innovative approaches to contain costs while also maintaining organizational and project goals. Over the next 5 years LandM Hospital is embarking on a number of strategic initiatives that are geared toward growth, updating the physical plant, improving our inpatient/outpatient care models, implementing electronic health records, and preserving the overall financial health of the organization. Many of these initiatives require the re-design of existing facilities or the building of new facilities. While the need for capital increases, access to capital continues to become more of a challenge. In order for LandM to achieve its strategic goals within planned timelines and budgets, the hospital has integrated the Production Preparation Process (3P) into the design phase of new and renovation facility projects. The 3P methodology incorporates Lean principles and demands interdepartmental collaboration and transparency at the earliest stages of the design phase. The focus is on rapidly designing or retrofitting facilities, services, and care models that support, and are not in contradiction with, Lean concepts of efficiency, optimal flow, and waste reduction. The overall goal is to implement a high-quality design process that is scalable in size and scope, while ensuring project managers meet timeline requirements at the lowest possible cost. Our key objectives are to create an ideal patient experience, integrate best-practice standards in process and clinical care, maximize space utilization to accommodate current and future volumes, and gain efficiencies in the 7 flows of medicine.

Social Media and Medical Imaging Management: What You Do Not Know Can Destroy Your Practice (Sponsored by the Associated Sciences Consortium) (An Interactive Session)

Tuesday, 03:30 PM - 05:00 PM • S105AB

LEARNING OBJECTIVES
Participants at this session will learn several cutting-edge analytical techniques for leveraging Social Media as an effective tool for monitoring the performance of their medical imaging facility. We are going to discuss the best use of social networks, professional networks, that companies will also teach several effective strategies for promoting the medical imaging services in an increasingly competitive market place.

ABSTRACT
Today, a single customer complaint from someone with highly connected social influence, can have more impact on your practice reputation than your best marketing efforts all combined. Given the rapid rise in the business impact of Social Media, we are going to discuss how effective social strategies improve off-line social failures for individuals and how in return ask these individuals to perform tasks that are beneficial to the service company. To understand what makes for an effective social strategy, we are going to examine a number of successful and successful ways of engaging users in medically related applications. Special attention will be given to the emerging role of social media in the medical imaging market place.

Patient-centered Radiology: How to Communicate Effectively (Sponsored by the RSNA Public Information Committee)

Tuesday, 04:30 PM - 06:00 PM • N229

LEARNING OBJECTIVES
1) Understand the rationale for and growing value of increased personalization of patient interactions in diagnostic radiology. 2) Recognize the best opportunities for increasing patient awareness of radiologists' contributions and how to demonstrate this in various practice settings. 3) Identify and implement patients' preferred method of communications, including traditional, digital and current social media.

ABSTRACT
Modern medicine has become so complicated and sub-specialized that patients and their families often are confused. Frequently patients are not even aware that a radiologist is providing important services or the nature of those services. In the current era of consumer-driven healthcare, outsourcing of imaging services and growing competition from non-radiologists, radiologists must provide personal and patient-friendly services and connect with patients to prevent imaging from becoming a commodity. The way to personalize and optimize patient contact varies according to practice setting. This course will provide specific examples and strategies for experienced imaging professionals as well as residents and fellows.

ASR®RSNA 2013: The Patient Experience - Our Shared Journey

Wednesday, 05:00 PM - 06:00 PM • N230

LEARNING OBJECTIVES
1) Discussion of the six 1s: A. Setting the goal B. Building the process through the six 1s: a. Intentional b. Individual c. Interactive d. Interpret e. Inspirational f. Institute. 2) The Patient Profile a. Gathering the information b. Understanding the goal c. Assuming our role 3) On-Stage, Off-stage a. Barriers to implementation b. Remembering our role and our goal. 4) The Patient's Story a. Each individual has a story b. Journeys made.

ABSTRACT
It is assumed by most people that those individuals providing healthcare services do so because they have a desire to care for others. The vast majority of us in imaging and radiation therapy joined the field for that very reason. While that is our goal, many of us are often lost amidst the maze of technology and advanced techniques. We have aspirations of doing more for our patients and their families but we are...
somewhat stilted as to how we can provide care in a more personal or meaningful way. We seek to provide an atmosphere of technical excellence as well as caring and support. Each of us recognizes and understands that our patients do not make their journey through our departments alone. This presentation will discuss this journey and provide the methods we can implement to serve as our patients' guides through the system.

Service Excellence in Radiology (Sponsored by the RSNA Professionalism Committee) (An Interactive Session)

Thursday, 08:30 AM - 10:00 AM  ●  E450B

LEARNING OBJECTIVES
1) Understand who the customer is in Radiology and why customer satisfaction scores are important. 2) Review how Radiology can document the added value role it plays in the enterprise. 3) Discuss how to manage workplace interruptions.

ABSTRACT
Service Excellence in healthcare is used generally to refer to patient or customer satisfaction, and our ability to consistently meet if not exceed the expectations of patients, their families and visitors. It can be more widely expanded to include interactions among staff within a group, across groups or job descriptions or across departments. Inherently it is the concept that healthcare is more than just the technical act of delivering service, in radiology that would be the performance of a diagnostic test for example that hit high marks for classic quality metrics like image quality, radiation dose optimization and clarity and accuracy of the interpretation. Service excellence embraces the notion that healthcare must address the psyche, emotions and worries of the customers we care for. It is about knowing when and how to say thank you. On a more tangable level, high marks for Service Excellence also translates into higher employee engagement, retention of staff and a drop in time and resources spent doing service recovery. Hiring for Service Excellence is important to having the right people in your organization, and sometimes letting those go who cannot live up to those expectations may be necessary to move forward. In the end, a commitment to Service Excellence is not about an expensive program delivered by others to train to, it is about treating everyone with respect and both setting and often exceeding expectations. With higher patient satisfaction scores comes retention of patients/customers, and word of mouth marketing that not about an expensive program delivered by others to train to, it is about treating everyone with respect and both setting and often exceeding expectations. With higher patient satisfaction scores comes retention of patients/customers, and word of mouth marketing that not about an expensive program delivered by others to train to, it is about treating everyone with respect and both setting and often exceeding expectations. With higher patient satisfaction scores comes retention of patients/customers, and word of mouth marketing that not about an expensive program delivered by others to train to, it is about treating everyone with respect and both setting and often exceeding expectations.

How to Avoid Failure: Qualities of a Successful Leader

Thursday, 08:30 AM - 10:00 AM  ●  E450B

LEARNING OBJECTIVES
1) To learn that inspired leadership is dedication to team success not self aggrandizement. 2) There is no job that is too big. There are only people lesser than the job. 3) Learn that without resources even well outlined goals cannot be achieved. 4) Absolute transparency is a must. 5) Be a role model.

ABSTRACT
Developing or continuing success within an organization is very dependent on the efforts and skills of leadership at all levels. Leadership is critical for all aspects of operational activities, including mission and goal setting, operational activities, outcome assessments, and communications within and external to the organization. The training to obtain these skill sets is inadequate in medical school and radiology residency, and most leaders, particularly at early levels of responsibility, develop these traits through either observing others or through trial and error experiences. This course will present an overview of the traits and states that one needs to be aware in managing organizations, followed by specific key points to avoid failure whether one is in a university or community setting. The emphasis will be on helpful practical tips to avoid states or traits that frequently are associated with bad outcomes for an organization and/or the involved leaders. Lastly, a commonly overlooked component of effective leadership is succession planning. A top priority, it will ensure that the strong organization the leader works hard to create will stand the test of time.

RC632A  •  AMA PRA Category 1 Credit ™:1  •  ARRT Category A+ Credit:1

LEARNING OBJECTIVES
View learning objectives under main course title.

RC632B  •  Keys to Avoid Failure: Key Qualities of a Successful Leader

LEARNING OBJECTIVES
View learning objectives under main course title.

ASRT®RSNA 2013: Normalization of Deviance and Radiology

Thursday, 01:00 PM - 02:00 PM  ●  E450B

LEARNING OBJECTIVES
View learning objectives under main course title.
LEARNING OBJECTIVES
1) Define Normalization of Deviance. 2) Discuss the History of Normalization of Deviance as it relates to NASA and health care in general. 3) Reflect on current practice and describe normalization of deviance as it is applied in imaging. 4) List negative consequence of normalization of deviance in imaging.

ABSTRACT
As an imaging professional we are taught to be a patient advocate, to be technically competent and to have a patient safety mindset. Why is it then that often times we see imaging professionals taking shortcuts and exhibiting behaviors that don't necessarily embody those characteristics? This lecture will explore Normalization of Deviance as a possible cause of this phenomenon. Normalization of Deviance breaks the safety culture, substituting a slippery slope of tolerating more and more errors and accepting more and more risk, always in the interest of efficiency and on-time schedules. (Prielipp, Mago, Morell and Brull, 2010) Simply, we take short cuts and veer from standards in the interest of patient flow and these short cuts become the norm because we don't see any extreme negative outcome. Over time, these new norms push the boundaries more and more. Normalization of Deviance theory has been applied to the Challenger space shuttle accident. Before the space shuttle blew up, O-ring erosion problems were documented numerous times. Over many occurrences and time, the engineers and managers started believing that these flaws were acceptable. This deviance became the new norm until the space shuttle accident. This lecture will discuss some of the new norms that may be becoming acceptable in imaging and possible negative outcomes.

ASR@RSNA 2013: How Do We Make Care Patient-Centered?
Thursday, 02:20 PM - 03:20 PM • N230

LEARNING OBJECTIVES
1) To provide the learner with an understanding of patient-centered care and examples of how integrating patient-centered care practices into the provision of care will enhance the patient experience. 2) To enable the learner to demonstrate practical skills in enhancing the patient experience. 3) To provide learner with an overview of the implications of patient-centered care on value-based care delivery.

ABSTRACT
Patient-centered care considers that patient care is not only focused on improving the overall quality of care, but more importantly places the focus of care on the patient. Determining what matters to the patient is the first step in a patient-centered approach to care delivery. Increasingly, attention is being placed on the patient's judgement of the care received. Emphasis is also being placed on reimbursing care based on the patient's judgement of the delivery of care. The patient-provider relationship or encounter may be the determinant of the patient's perception of the communication with their provider. Patients want to communicate effectively with their provider. When good communication with the provider exists, patients report better outcomes. Providers who are not engaged in patient-centered care risk being judged adversely by patients. Providers should understand the tenets of patient-centered care delivery and the implications for the lack thereof.

RSNA Diagnosis Live™: Radiology Potpourri
Thursday, 03:00 PM - 04:00 PM • E450A

LEARNING OBJECTIVES
1) To introduce the participant to a series of radiology case studies via an interactive team game approach designed to encourage active consumption of educational content. 2) The participant will be able to use their mobile wireless device (tablet, phone, laptop) to electronically respond to various imaging case challenges; participants will be able to monitor their individual and team performance in real time. 3) The attendee will receive a personalized self-assessment report via email that will review the case material presented during the session, along with individual and team performance. This interactive session will use RSNA Diagnosis Live™. Please bring your charged mobile wireless device (phone, tablet or laptop) to participate.

ABSTRACT
The extremely popular audience participation educational experience is back! Diagnosis Live! is an expert-moderated session featuring a series of interactive case studies that will challenge radiologists diagnostic skills and knowledge. Building on last year's successful Diagnosis Live! premiere, this session features a lively, fast-paced game format: participants will be automatically assigned to teams who electronically respond to various imaging case challenges; participants will be able to monitor their individual and team performance in real time. 3) The attendee will receive a personalized self-assessment report via email that will review the case material presented during the session, along with individual and team performance.

Ultrasound of Superficial Structures (An Interactive Session)
Thursday, 04:30 PM - 06:00 PM • E353B

LEARNING OBJECTIVES
1) To recognize the various intra- and extra testicular lesions seen on a sonographic examination. 2) To understand the variety of predominantly benign extra-testicular lesions seen in adult men. 3) To recognize the variety of intra-testicular lesions seen and to understand the malignant composition of the majority of these lesions. 4) To understand the role of sonography in acute scrotal pain. 5) To understand the role of application of color Doppler to the examination. 6) To appreciate the possible role of the new imaging techniques of contrast-enhanced sonography and tissue elastography.

ABSTRACT
Ultrasoundography remains the ideal imaging method for examining the scrotal contents, with high inherent resolution of the technique and the superficial position of the scrotal contents helping. Any abnormalities present may be divided into extra-and intra-testicular lesions; the majority of lesions outside the testis in the adult likely to be benign and the majority within the testes likely to be malignant; in the pediatric population an extra-testicular lesion may be malignant; a rhabdomyosarcoma likely. The assessment of the extra-testicular space will identify cysts (spermatoceles) hydroceles, varicoceles and the solid tumors of adenomatoid or lipoma origin. Within the testes the focal lesion ids likely a primary germ cell tumor; seminoma or a mixed germ cell tumor of different cell lines. Rarely a benign entity
may be encountered; epidermoid cyst, segmental intarction or a Leydig cell tumor. The differentiation of malignant from benign may be dependent on the presence of vascularity on color Doppler sonography. Rare intra-testicular lesions such as sarcoidosis or adrenal rest cells may cause difficulty. The presentation with acute testicular pain may be problematic but age is important; a pubescent boy may have spermatic cord torsion, the older man inflammatory disease. Color Doppler sonography may help in the differentiation but beware of the sonographic diagnosis of torsion; this is essentially a clinical diagnosis. The presence of testicular microthiasis has associated risk factors, and sonographic surveillance is controversial. Macrocalfication may also have implications for the patient. The issue of testicular sparing surgery for benign disease may be realized with the advent of the newer techniques. Contrast-enhanced sonography confirming the absence of vascularity indicating the lesion is benign and tissue elastography confirms the lesion is hard indicating malignancy.

RC710B • Thyroid

Jill E Langer MD (Presenter) *

LEARNING OBJECTIVES
1) Recognize the sonographic features of thyroid nodules that are most predictive of malignant nodules. 2) Recognize the sonographic features of thyroid nodules that are most predictive of benign nodules. 3) Discuss different recommendations and indications for performing FNA of thyroid nodules.

ABSTRACT
Thyroid nodules are commonly noted in the thyroid gland of adults when examined by sonography. The sonographic features of thyroid nodules have been recognized to be the most important feature of thyroid nodule assessment with respect to the risk of malignancy. The optimal management of an incidentally-detected thyroid nodule depends on a working knowledge of which sonographic features raise suspicion for malignancy as contrasted which those features present in the much more common, benign nodule. This talk will review those sonographic features as well as discuss the rationale for the recommendations from both the Endocrinology and the Radiology literature concerning which nodules should undergo fine-needle aspiration (FNA).

RC710C • Lumps, Bumps, and Hernias

Gandikota Girish MBBS (Presenter)

LEARNING OBJECTIVES
1) Understanding the sonographic appearance of lipomas in the subcutaneous tissues. 2) Differentiating lipomas from liposarcomas. 3) Understanding some of the common pitfalls when using sonography to evaluate patients for inguinal hernias.

ABSTRACT
Sonography is a useful tool for evaluating superficial lumps and bumps in the adult patient. Lipomas are one of the more common superficial lumps, and sonographic evaluation can demonstrate compressibility, vascularity, homogeneity and overall appearances similar to adjacent adipose tissue. However a clinical history of the presence of pain, a recent increase in size and a sonographic finding of a soft tissue component may suggest a more aggressive etiology. Inguinal hernias are a common clinical condition which may present with inguinal discomfort, and Ultrasound is a useful means for making a definite diagnosis. However, there are a number of concepts which help the practitioner maximize the utility of the technique, including understanding the keyhole effect, treating the inguinal canal as a vessel, understanding the relationship between the deep ring and the inferior epigastric artery, and being aware of the 'thin man' pitfall and the normal movement of the spermatic cord, to name a few.

What the Referring Physician Needs to Know (Sponsored by the RSNA Public Information Committee)

Thursday, 04:30 PM - 06:00 PM • S504AB

RC716 • AMA PRA Category 1 Credit™:1.5 • ARRT Category A+ Credit:1.5
Moderator
Judy Yee, MD *
Jeffrey D Kopin, MD
Stephan G Wyers, MD
Sally Reynolds, MD

LEARNING OBJECTIVES
1) Discern what referring physicians need from radiologists at various stages of patient care. 2) Recognize referring physicians preferences in communication methods. 3) Identify referring physicians' needs regarding structured reporting and appropriateness criteria. 4) Understand how to improve your communications and work more effectively with referring physicians to enhance patient care. 5) Recognize opportunities to improve/expand your interactions with referring physicians.

RC816 • AMA PRA Category 1 Credit™:1.5 • ARRT Category A+ Credit:1.5
Coordinator
William W Mayo-Smith, MD *

RC816A • RSNA Committee on International Radiology Education: How We Can Help

Teresita L Angtuaco MD (Presenter) ; William W Mayo-Smith MD (Presenter) *

LEARNING OBJECTIVES
1) Improved ability to participate in or develop global radiology projects. 2) Understand available resources and types of organizations involved in global radiology. 3) Create a viable framework for global radiology incorporating the multifactorial implementation challenges. 4) Develop global radiology strategies that maximize sustainability and scalability.

ABSTRACT

RC816B • Political Challenges and Ethical Practices

Kristen K DeStigter MD (Presenter) *

LEARNING OBJECTIVES
1) Describe the ethical considerations associated with setting up a global imaging project. 2) Discuss the political challenges that may be encountered when designing and implementing a global imaging endeavor. 3) Understand the cultural factors that play into the political and ethical challenges.
Marc D Kohli MD (Presenter) *

LEARNING OBJECTIVES
1) Identify challenges particular to providing radiology service in a resource-constrained setting. 2) Explain how partnerships and bi-directional exchange can be used to address these challenges.

ABSTRACT

RC816D • Creating a Remote Digital Department: Funding Is the Easy Part
Jeffrey B Mendel MD (Presenter) *

LEARNING OBJECTIVES
1) Improve ability to participate in or develop global radiology projects. 2) Understand available resources and types of organizations involved in global radiology. 3) Create a viable framework for global radiology incorporating the multifactorial implementation challenges. 4) Develop global radiology strategies that maximize sustainability and scalability.

ABSTRACT

RC816E • Strategies For Sustainability and Scalability of Radiology in Developing Countries: Lessons Learned from RAD-AID's Radiology-Readiness Model
Daniel J Mollura MD (Presenter)

LEARNING OBJECTIVES
1) Describe evidence of radiology needs in limited-resource regions. 2) Describe how data collection and analysis can help radiology planning in developing world. 3) Provide examples showing that projects planned from data analysis can increase long term effectiveness of radiology services in the developing world.

ABSTRACT

The World Health Organization (WHO) reports that 50–70% of the world’s population has inadequate or no access to medical imaging, such as radiography, ultrasound and mammography. This disparity has contributed to inadequate health care among poor populations, such as for women’s health (breast cancer screening and maternal infant health), HIV-related disease, Tuberculosis, cancer, heart disease, and trauma, because these diseases often require radiology for diagnosis and care. To address this worldwide problem, multidisciplinary approaches should be optimized to include economic development, health care system evaluation, technology innovation, clinical education, and technical training. Projects developed on this model can increase targeted effectiveness for long term radiology services by implementing programs that specifically meet measured needs and can be monitored for outcomes. Moreover, data collection and analysis of radiology needs should ideally encompass these multidisciplinary areas in order to clearly target the highest yield areas for intervention given the infrastructure, economic context, referral pathways, and epidemiological disease patterns. By scaling this model for diverse regions based on interdisciplinary teams and methods, radiology services in the developing world can address shortages and decrease global health care disparities.

Disclosure Index

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