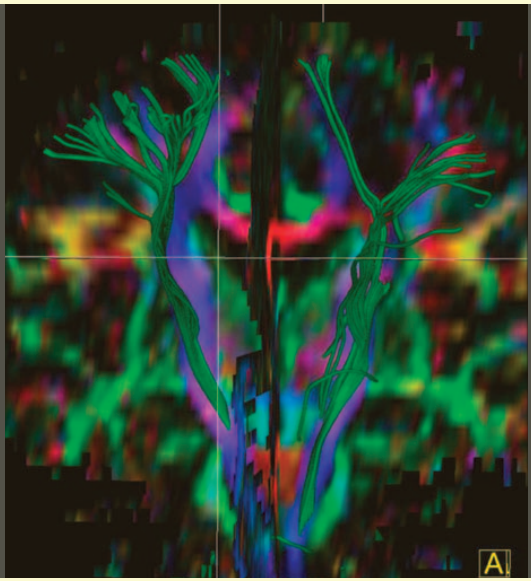
Cleveland Clinic

Best in Practice: Improving MR and CT Imaging



October 13–16, 2010

Las Vegas, NV

This program is designed for physicians, physician trainees, and technologists, and is sponsored by Cleveland Clinic's Imaging Institute. This three-day program provides an in-depth review of the physics of both MRI and CT, and includes focused presentations emphasizing the spectrum of clinical applications. In addition, the recognition of common imaging artifacts, along with their solutions, and approaches to image and protocol optimization for both MRI and CT will be included.

Course Overview

This three-day program is designed to provide a thorough review of MR and CT physics and to discuss MR and CT techniques and applications in musculoskeletal, neuro, breast, pediatric, vascular, cardiac, and abdominal/body imaging. The program will also explore technical limitations of current imaging and potential methods for improvement.

Target Audience

This program is open to all physicians, physician trainees, and technologists, and is sponsored by Cleveland Clinic's Imaging Institute.

Course Objectives

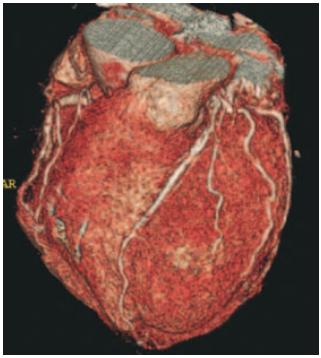
Upon completion of this activity, the participant will be able to:

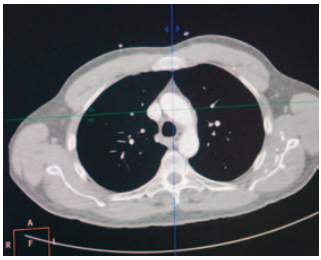
- Explain spin echo and gradient echo sequence families.
- Describe the principles of signal acquisition for each type of sequence.
- Distinguish the advantages and disadvantages of multi-echo acquisitions.
- Describe common K-space trajectories with spin echo and gradient echo sequences.
- Contrast the tradeoffs among bandwidth, spatial resolution, and contrast resolution for image quality assessment.
- Recognize the importance of surface coil technology in specific applications for abdominal/body and musculoskeletal MRI.
- Recognize the evolution of CT technology, and impact on current clinical applications.
- Describe the principles of CT image acquisition, image reconstruction and post-processing.
- Distinguish the advantages and disadvantages of sequential, axial and spiral acquisition mode, and image quality.
- Describe common CT artifacts.
- Contrast the tradeoffs among radiation dose, slice thickness, acquisition mode, and image quality.
- Recognize the importance of radiation dose reduction techniques with particular attention to pediatric and cardiovascular imaging.

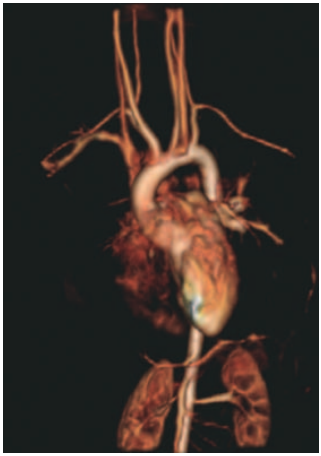
Faculty

Course Director:
Scott D. Flamm, MD

Cleveland Clinic Faculty:
Mark Baker, MD
Frank Dong, PhD
Sandra S. Halliburton, PhD
Stephen Jones, MD
Ellen Park, MD
Micheal Phillips, MD
Janet Reid, MD
Brad Richmond, MD
Paul Ruggieri, MD
Randy Setser, DSc
Laura Shepardson, MD
Joseph Veniero, MD, PhD
Stacey Winners, RT (R)
Cyndi Yurkschatt, RT (R)(MR)







Faculty Disclosure

The Cleveland Clinic Foundation Center for Continuing Education has implemented a policy to comply with the current Accreditation Council for continuing Medical Education Standards for Commercial Support requiring resolution of all faculty conflicts of interest. Faculty declaring a relevant commercial interest will be identified in the activity syllabus.

Agenda – Best In Practice: Improving MR & CT Imaging

Wednesday, October 13, 2010

4–8:00 p.m.	Pre-Registration and Welcome Reception	

Thursday, October 14, 2010

MAGNETIC RESONANCE IMAGING – PART 1

7:30 a.m.	Continental Breakfast and Registration	
8:10 a.m.	Welcome/Introduction	*Scott D. Flamm, MD*
8:20 a.m.	MRI Signal Source & T1 Recovery, T2 Relaxation, and T2* Dephasing	*Randy Setser, DSc*
9:10 a.m.	Spatial Localization: Phase and Frequency Encoding, Slice Selection	*Stephen Jones, PhD*
10:00 a.m.	Break	
10:20 a.m.	MRI Safety: Implants, SAR, and Heating	*Paul Ruggieri, MD*
10:50 a.m.	GRE & SE Imaging; T1 & T2 Sequences	*Stephen Jones, PhD*
11:40 a.m.	Lunch	
1:00 p.m.	Clinical: Musculoskeletal	*Bradford Richmond, MD*
1:50 p.m.	K-space: Trajectories and Effect on Contrast; Defects in k-space	*Joseph Veniero, MD, PhD*
2:40 p.m.	Break	
3:00 p.m.	SNR and Image Quality: Bandwidth, Spatial Resolution, Contrast Resolution	*Scott D. Flamm, MD*
3:30 p.m.	Clinical: Abdominal/Body	*Joseph Veniero, MD, PhD*
4:20 p.m.	Contrast Agents and NSF	*Scott D. Flamm, MD*
4:50 p.m.	Adjourn	

Agenda – Best In Practice: Improving MR & CT Imaging

Friday, October 15, 2010

MAGNETIC RESONANCE IMAGING – PART 2

7:30 a.m.	Continental Breakfast and Registration	
8:10 a.m.	Welcome	*Scott D. Flamm, MD*
8:20 a.m.	Coils	*Cyndi Yurkschatt, RT*
8:50 a.m.	Clinical: Neuro I: Practical Approach to Optimizing Brain Imaging	*Paul Ruggieri, MD*
9:20 a.m.	Clinical: Neuro II: Advanced Imaging with DTI and fMRI	*Micheal Phillips, MD*
9:50 a.m.	Break	
10:10 a.m.	Artifacts: Chemical shift, motion, susceptibility, zipper, truncation, wrap, etc.	*Joseph Veniero, MD, PhD*
11:00 a.m.	Clinical: Pediatrics	*Janet Reid, MD*
11:30 a.m.	Imaging at 3-Tesla	*Joseph Veniero, MD, PhD*
12:00 p.m.	Lunch	
1:00 p.m.	Parallel Acquisition: Techniques, benefits and tradeoffs	*Scott D. Flamm, MD*
1:30 p.m.	Clinical: Breast	*Laura Shepardson, MD*
2:00 p.m.	Break	
2:20 p.m.	Flow and MRA	*Randy Setser, DSc*
3:10 p.m.	Clinical: Cardiac	*Scott D. Flamm, MD*
4:00 p.m.	Adjourn	

Agenda – Best In Practice: Improving MR & CT Imaging

Saturday, October 16, 2010

COMPUTED TOMOGRAPHY

7:30 a.m.	Continental Breakfast and Registration	
8:10 a.m.	Welcome/Introduction	*Scott D. Flamm, MD*
8:20 a.m.	CT Hardware and Data Acquisition	*Sandra S. Halliburton, PhD*
9:10 a.m.	CT Image Reconstruction and Image Display	*Frank Dong, PhD*
9:40 a.m.	CT Image Processing	*Stacie Winners, RT*
10:10 a.m.	Break	
10:30 a.m.	CT Accreditation: Importance, Considerations, and Process	*Frank Dong, PhD*
11:00 a.m.	Clinical: Abdominal	*Mark Baker, MD*
11:30 a.m.	Clinical: Neuro – Imaging of Brain Attack: CT, CTA, and Perfusion	*Paul Ruggieri, MD*
12:00 p.m.	Lunch	
1:00 p.m.	Clinical: Peds – Scanning approaches with attention to dose	*Ellen Park, MD*
1:30 p.m.	Clinical: Musculoskeletal – Orthopedics and CT Arthrography	*Bradford Richmond, MD*
2:00 p.m.	Radiation Dose Considerations & Dose Reduction Techniques for CT	*Scott D. Flamm, MD*
2:30 p.m.	CT using Dual Energy: Imaging, techniques considerations, and reconstruction tools	*Sandra S. Halliburton, PhD*
3:00 p.m.	Break	
3:20 p.m.	Clinical: Vascular	*Scott D. Flamm, MD*
3:50 p.m.	Common CT Artifacts	*Sandra S. Halliburton, PhD*
4:20 p.m.	Clinical: Cardiac	*Scott D. Flamm, MD*
4:50 p.m.	Wrap-up	*Scott D. Flamm, MD*
5:00 p.m.	Adjourn	

Hotel Information

Caesar's Palace
3700 West Flamingo Road
Las Vegas, NV 89103
800.634.6661

$145.00/night (reservation code – SCCLE0)
Room reservations deadline: September 13, 2010

Travel Information

Airport Transportation

McCarran International Airport (LAS) to Caesar's Palace
Distance: 4.5 miles

Time by taxi or car: 10–15 minutes
Cost: Taxi service is approximately $20.00

Driving Directions

McCarran International Airport (LAS) to Caesar's Palace

- Head north on Wright Bros Ln
- Take the 1st left toward Wayne Newton Blvd.
- Turn right at Wayne Newton Blvd
- Take the ramp onto Wayne Newton Blvd
- Continue onto Swenson
- Turn left at E Harmon Ave
- Slight right to stay on E Harmon Ave
- Slight right at Paradise Rd
- Turn left at E Flamingo Rd
- Turn right at Las Vegas Blvd S
- Make a U-turn, and the hotel will be on the right

Parking

Caesar's Palace offers complimentary self-parking or valet service to all hotel guests.

Registration Fees*

$850.00 or $300.00/day** Physicians
$400.00 or $150.00/day Technologists / Residents / Fellows

Registration is available by mail, fax or online at www.ccfcme.org/BestInPractice10.

*Fees include: syllabus, continental breakfasts, lunches and refreshment breaks. Payment must be received prior to admittance to the course. Purchase orders are not accepted. Cancellation policy: for full refund cancellation must be made at least 30 days in advance of course.

**The discounted fee for Comprecare affiliates is $825.00 or $275.00 /day.

Accreditation Statement

The Cleveland Clinic Foundation Center for Continuing Education is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The Cleveland Clinic Foundation Center for Continuing Education designates this educational activity for a maximum of ***20 AMA PRA Category 1 Credit(s)™***. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Participants claiming CME credit from this activity may submit hours to the American Osteopathic Association Council on Continuing Medical Education for Category 2 credit.

This activity has applied for ***ASRT Credits***.

Americans with Disabilities Act

The Cleveland Clinic Foundation Center for Continuing Education fully intends to comply with the legal requirements of the Americans with Disabilities Act. If you need assistance, please notify Lisa Clough at 216.444.7760 or cloughl@ccf.org at least two weeks prior to the activity.

Cleveland Clinic
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Registration

Course# 020696
OFFICE USE ONLY
Fee _____
Date _____
MOP _____
Cxl/Fee _____

Best in Practice:
Improving MR and CT Imaging

October 13–16, Las Vegas, NV

Fees | US Funds*

$850.00 or $300.00/day** Physicians
$400.00 or $150.00/day Technologists / Residents / Fellows

*Fee includes: syllabus, continental breakfasts, lunches and refreshment breaks. Payment must be received prior to admittance to the course. Purchase orders are not accepted. Cancellation policy: for full refund cancellation must be made at least 30 days in advance of course.
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Register online at www.ccfcme.org/BestInPractice10

If you register online, please do not mail or fax in a registration form.

Complete the information below if registering by mail or fax:
(PLEASE PRINT)

Last Name First Name MI Degree

Address

City State Zip

Phone Number Fax Number

Email Address Specialty

Course Date (please note which day(s) you will be attending)

❑ October 13 (Reception) ❑ October 14 (MRI Part 1) ❑ October 15 (MRI Part 2) ❑ October 16 (CT)

Total amount enclosed or to be charged: $_____

Make check payable to: The Cleveland Clinic Educational Foundation (USD)
or charge the following account: ❑ Visa ❑ MasterCard ❑ American Express ❑ Discover Card

Card Number Exp. Date 3/4 Digit Verification

Signature

Fax number:
216.448.0783

Mailing address:
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Cleveland, OH 44193-1082