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## Meet Your New SMRT President, Karen Bove Bettis, R.T. (R)(MR)



*Signals: Karen please describe your unique situation as you transition into the Presidency.*

**Karen:** The transition from President-Elect to President has not gone exactly as I would have envisioned last year. Many SMRT members know I was injured in an auto accident a couple of years ago which required emergency spine surgery this past September, just as I was ready to leave for the first SMRT regional seminar of the 3rd quarter. I was only supposed to be away from the office for two to three weeks; however, that time period has strung itself out to the present time. While I have been able to work on my computer from bed during most of the past year, I have also required three more surgeries further complicating my duties. My appreciation and gratitude goes out to members of the ISMRM/SMRT Central Office staff and Policy Board members who stepped in for me, assisted in getting files and were always there when I needed a phone call instead of an e-mail. While I was not able to travel to Miami, the gavel still passed from our most capable leader, Cindy T. Hipps. I am still working from home but the transfer from one president to another has taken place even so.

*Signals: How long have you been involved with MR or where did you begin your career in MR?*

**Karen:** I began my MRI/S career in San Francisco, working as a neuro-technologist (CT, angio, etc.) at the University of California at San Francisco Medical Center. One of the many very brilliant radiology residents had scheduled time on the research CT scanner, and I happened to be the technologist working that day/night on the scanner. His project was to scan a large, white rat from the tip of its nose to the tip of its tail every 5mm with the highest resolution possible (256°). Technologists today may not understand that in 1979-1980, this translated into many hours scanning and then reconstructing data well into the night. The rat was then taken to the NMR Research Center to be carefully scanned again from head to toe. Pathology slices were precisely matched to the images of the CT and MRI scans. This project was a phenomenal learning experience which was not only intriguing but led to a long lasting love of medical imaging as well as research. I literally just happened to be in the right place at the right time in medical history.

*Signals: What kinds of MR work do you or have you done at the NIH?*

**Karen:** After working several years in clinical out-patient settings, I wanted to return to the research environment. The National Institutes of Health (NIH) provided this opportunity. Initially, I started at the (NIH) as a contractor for the Clinical Radiology Department, assigned to the NMR Research Center (NMRC) in the fall of 1993. The NMRC is funded by several different institutes, which have their own scanners and technologists. What we all share is the space and the responsibility to ensure safe scanning. The staff in the NMRC is also responsible for animal scanning as well as investigational phantom scanning (designing and testing new scanning sequences and techniques as well as testing hardware and software).

I left the government in 1996, but not the NIH, for an outsourced position in the cardiology branch. My new position, as a cardiovascular MRI Technologist, with the National Heart, Lung and Blood Institute (NHLBI) was still in the NMR Research Center working on a prototype, gradient enhanced scanner. Our MRI mission was to develop true cardiovascular MR imaging, which could be used as a diagnostic tool in the clinical setting. My position included researching cardiac scan planes, cardiac gating issues, educating radiologists, cardiologists, and MR technologists.

Though I loved my work in the cardiology branch, I was ready for a change. In 2001, I was hired by the National Institute of Mental Health (NIMH) to work on a 3 Tesla, performing neuro functional MRI, in addition to taking over many of the administrative issues such as developing accurate scan logs, policy manuals, secure handling of patient data, safety, scanner performance, education for researchers, etc. The skills gained in the cardiology branch allowed me to apply those skills to assist in researching the MR Venogram technique exploiting the blood oxygenation level (BOLD). My position remains with the NIMH, as a MRI Technologist/Research Assistant, in the Functional MR Facility, under the tutelage of Drs. Peter Bandettini and Jerzy Bodurka.

*Signals: What part of your work do you enjoy the most?*

**Karen:** I enjoy meeting and helping scientists, teaching them to scan technically efficiently and safely. Many scientists come from around the world to work at the NIH, exposing me to many cultures in just one day. The NIH is just one of the institutions that talented physicians, physicists, psychologists, etc., pass through before making a name in the medical annals. When working with such a varied group of scientists, I learn from and often get to tag onto projects that interest me. Not unlike my time at UCSF. This keeps me from getting bored and broadens my outlook. Assisting on many cutting edge projects of MRI/S is very enjoyable. I cannot imagine working anywhere but the NIH because of the opportunities it allows.

*Signals: How would you advise an MR tech who is interested in research scanning?*

**Karen:** First, the technologist must decide what kind technologist they are. Not all technologists are cut out to be in research any more than some are cut out to be in the clinical setting. Scan procedures and protocols can vary ever so slightly but can mean the difference between a successful project or not. Research centers are not usually funded or staffed as clinical centers would be. Some staff must become a "jack of all trades" in order to keep schedules flowing. Research is a publish or perish world, so at times, working hours can vary. During "abstract season" and/or meeting presentation season, researchers will be scanning as many hours as possible through the night and into the early morning. Second, target the institutions where one would like to work. Try to arrange a

short site visit to a research site just to see how things work and if possible, work as a contractor for a few weeks to decide if it's a good match of skills and temperament. Most importantly, network...network...network. Even informal conversations during breaks at educational seminars may provide interesting bits of information regarding a particular site.

A downside to working exclusively in research is the possible decline of clinical skills, so important in the clinical setting. I would strongly advise any technologist who may be thinking of jumping to the research side to try and keep as many of their clinical skills and tools as possible.

*Signals: Please describe your activities within the SMRT.*

**Karen:** I was accepted to join the Society of Magnetic Resonance in Medicine (SMRM) in 1989. The SMRM was the precursor to the present ISMRM. I joined the Technologist Section in 1993, and have carried dual membership since that time. Though I joined the SMRT early on, I didn't get involved until years later. I would attend every seminar I could and carefully tracked the credentialing moves of the ARRT. I simply didn't volunteer. I was afraid of speaking in public. But just as my MR skills have evolved over time, so too have my presentation skills. My first presentation, given in Vancouver, was at the SMRT Annual Meeting in 1997. This oral presentation was titled "Evaluation of a Cardiac Phased Array Coil for MRI of the Heart."

The next year, I was elected to the Policy Board, taking office in Sydney. In Sydney, I authored a poster presentation titled "The Importance of ECG Gating to Cardiovascular MR Image Quality and Physiological Findings" and co-authored a couple of poster presentations submitted to the ISMRM Annual Meeting.

The following year, 1999, I was asked to Chair the Education Committee, which I did for the next two years. My Policy Board commitments took me through the 2001 Glasgow meeting, though I have continued to be a member of the Education Committee.

During this time-frame, I continued to submit abstracts and was honored by the acceptance of my submissions:

1999– *Visualization of the Mitral Valve Leaflet Motion by MRI*

2000– *Imaging Renal Sinus Cysts in Patients with Fabry's Disease*

2002– *Demonstration of Cerebral Venous Vasculature Using a High Resolution Venogram Technique at 3 Tesla*

2002– *The Appearance of Calcification Artifact in the Falx Cerebri on Phase Maps Using a High Resolution Technique at 3 Tesla*

2003– *Case Report: Clinical Use of Susceptibility Weighted MR Venograph*

My work on Fabry's disease was developed into a co-first-authored research article which was published in September 2004, in *Kidney International*. The work on the MRV technique garnered me my first invitation as an invited speaker at a prestigious conference held last year.

*Signals: What your plans are for the SMRT this coming year?*

**Karen:** 2005-2006 is an important transition year for the SMRT. The SMRT, as a professional organization, has reached the point when it must expand to meet the global challenges of its members. Some members, who have been with the SMRT since its inception, are looking to the organization for additional services and representation as well as continuing the primary mission of assured quality MR education.

Last year the SMRT initiated and received Recognized Continuing Education Evaluation Mechanism (RCEEM) from the American Registry of Radiologic Technologists (ARRT). As the SMRT begins its first year of providing continuing education credits under the RCEEM to its programs and to other affiliated organizations, this in itself is an important way to expand representation and service. The SMRT is working with primary credentialing organizations, such as the ARRT, to establish minimally acceptable standards of education and training for MRI/S technologists. The allied healthcare profession shortage is too severe for any professional organization to ignore. The SMRT must work with the other organizations to increase the number of technologists now....not 4-6 years from now, by representing quality MR education without compromising minimally acceptable education standards.

*Signals: What do you see as the main concerns for MR technologists in the U.S.?*

**Karen:** The severe shortage of well trained MRI/S technologists and the pressure to train persons who might otherwise not be suited for a career in medical imaging is of utmost concern. While pay scales have

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increased in the past decade, it is evident that they need to rise again in order to keep well-trained technologists working in the field. Additional reasons we are losing well-trained personnel include the lack of flexibility in work schedules, mandatory (unwanted) overtime, healthcare providers choosing profit over safety, and insurance companies, rather than a MR trained physician, deciding what scans they will pay for rather than what are necessary.

*Signals: What do you see as the main concerns for MR technologists worldwide?*

**Karen:** Again, the shortage of trained MR professionals is worldwide so there is pressure to train individuals on the job rather than in a quality, structured setting. As in the United States, technologists around the world must contend with the lack of universal standards for education and training as well as the lack of standards in the credentialing processes.

*Signals: How can the SMRT serve the membership which covers a wide range of MR practices?*

**Karen:** The SMRT is the largest global organization dedicated to the MR professional. It offers to the members a variety of continuing education opportunities such as the *SMRT Educational Seminars* home study program and quality Regional Seminars that are hosted by SMRT members across the US, Canada, Australia and hopefully soon, in Europe. By becoming a member of the SMRT, one has a voice in the structure of the Society and has the ability to change the professional outlook for the better. We can change deficiencies but only by working together.

*Signals: Any other thoughts you would like to share with the SMRT membership?*

**Karen:** Though I have not been able to travel to SMRT Meetings, Regionals or otherwise, I have attempted to stay very involved at every level. Again, I must thank all those members who have helped me through the past year and will continue to assist me in the coming year. I cannot express the amount of gratitude I feel.

My career in medical imaging has spilled over into my personal life as well. Imaging is my profession and avocation. I enjoy photography, especially macro photography (flowers, landscapes). This has proved to me is that I made the correct career choice years ago, even if I wasn't aware of it at the time. I can't wait to be able to get back to imaging full time, whether at work or at home. ●

## Editor's Letter

Julie Strandt-Peay, B.S.M., R.T. (R)(MR)



Welcome.

In this issue we meet our new President **Karen Bove Bettis** as she begins her term in an unusual way. We also meet **Mark Spooner**, newly appointed Chair of the Publications Committee. *SMRT Educational Seminars* home study editor, and new SMRT Fellow **Anne Sawyer-Glover** announces the latest in the series. From the recent SMRT Annual Meeting in Miami we have the Business Meeting report from Secretary **Gina Greenwood**, the conference report from **Robin Greene-Avison**, and the report on the SMRT/ISMRM Joint Forum from **Todd Frederick**. The quality of work submitted to the meeting is evidenced by the tie for the first place clinical focus oral presentations. These abstracts, the first place research focus oral presentations, and the first place poster presentations both clinical and research focus are included for your review. The impressive listing of authors and their work demonstrates the involvement and professionalism among SMRT members throughout the world.

Be sure to check out the extensive list of officers and committee members on page 20. This represents thousands of volunteer hours each year to sustain and improve the SMRT for you. **Cindy Hipps** reminds us that it is time to consider being more involved by agreeing to be on the ballot for Policy Board. The Associated Sciences Consortium of the RSNA is having a special celebration as described by **Julia Lowe**, who keeps us connected to affiliated organizations. Details of the new RCEEM status are shared by **Heidi Berns**.

A successful SMRT Regional Seminar is reported by **Denise Echelard** of Washington State. Pediatric MR columnist, and new SMRT Fellow **Michael Kean** and co-author **Leanne Hallowell** explain how to help children cope with the MRI exam. Resident MR Safety expert **Frank Sherlock** presents his findings at 3 Tesla. Rounding out this issue is an invitation from 2006 Program Chair **Todd Frederick** inviting us to Seattle. Enjoy!

## Introducing the New Chair of Publications

Mark Spooner, B.P.S., R.T. (R)(MR)(CT)



Greetings.

My name is Mark Spooner, and I have accepted the position of Publications Committee Chair, succeeding Gregory Brown, who held the position for the past two years. I have been an MRI Technologist for 18 years, and started my term on the SMRT Policy Board at the 2004 Annual Meeting in Kyoto.

The Publications Committee works to distribute pertinent information and MRI educational material to the SMRT membership. The *Signals* newsletter is mailed to members four times per year. Julie Strandt-Peay is the current editor and has served in the position since the 2001 Annual Meeting in Glasgow. Another member benefit is the *SMRT Educational Seminars* (home study program), which has been produced and edited by Anne Sawyer-Glover since January of 2004. If anyone has any ideas for future articles in the *Signals*, or future topics for the *SMRT Educational Seminars*, please contact me with your ideas.

Other responsibilities of the committee include maintenance of the SMRT web site and monitoring the "MRI Technologist List Serve." Some goals for the next year are to participate in the In-Vivo newsletter, and promote the "Highlight Your Site" section of the web site. Each of the Policy Board members will be submitting pictures and articles to place on the web site. I encourage all SMRT members to send pictures and a description of your facility to the "Highlight Your Site" web page (<http://ismrm.org/smart/highlight/index.html>). It is a simple process, and the ISMRM/SMRT office will produce a professional looking web page. Visit the SMRT web site for more information about featuring your work place for all members to see.

I look forward to serving as the Publications Chair. If any members have suggestions, or would like to volunteer to assist with any of the subcommittees listed above, please contact me at: [m Spooner@mac.com](mailto:m Spooner@mac.com). ●

# Update on SMRT Educational Seminars Home Study Program

Anne Marie Sawyer-Glover, B.S., R.T. (R)(MR), Editor



We are pleased to present the *SMRT Educational Seminars, Volume 8, Number 2: "Cardiovascular MRI: Update II."* This is the twenty-eighth home study developed by the SMRT, exclusively for the SMRT members.

With the advent of improved hardware, software and RF coils, the speed of MR imaging has increased significantly over the last few years. Consequently, the improved visualization of cardiac motion and flow was an obvious application on which an overwhelming number of MR imagers would focus. The learning curve for the MR technologists conducting these examinations was steep for many as the cardiac physiology presented new challenges. In addition, there was an increase in the complexity of the imaging software and options. As with any comprehensive review of cardiac MR imaging, our twenty-eighth issue begins with a discussion of the basics. The most fundamental procedures are the necessary building blocks required for reliable and consistently successful MR examinations of the cardiovascular system. Fast imaging techniques such as SSFP/True FISP/FIESTA provided improved tissue contrast between myocardium and blood. Long-awaited goals of cardiac imagers, such as myocardial delayed hyper-enhancement and first-pass stress perfusion, have become a reality in many clinical MR departments.

Thanks to Cindy Comeau for the organization and direction of this home study. In addition to the many of hours contributed in service of the SMRT, Cindy inspires others to share their knowledge and expertise. A sincere thank you to both Cindy and Stephen Darty for their generosity and for making the time to put it to paper. The images they have included provide invaluable experience and will be a priceless resource that we utilize for years to come.

For additional information regarding MR imaging of the cardiovascular system, please refer to *SMRT Educational Seminars* home studies: Volume 2, Number 2 "*Directions in Basic Cardiac Imaging*" Volume 2, Number 3 "*Directions in Advanced Cardiac Imaging*" Volume 7, Number 2 "*Cardiovascular MRI: Update I*"

These back issues may be purchased through the Berkeley, California, USA, office of the SMRT/ISMRM (please see information below).

Thanks to Ray Schmitz, Wendy Strugnell and Pamela Vincent for writing the questions that compose the quiz for which continuing education credits are redeemed. Thank you to Drs. Wolff and Dembo for reviewing the text and quiz. Thanks to Bobbi Lewis, Frank Macaluso, and Sandra Rodriguez for conducting the ECE credit review. Finally, thank you to Greg Brown, Past SMRT Publications Chair, and in the ISMRM/SMRT office, Sheryl Liebscher, Publications Manager, and Jennifer Olson, Associate Executive Director, for their insight and long hours supporting these educational symposia.

The SMRT welcomes and actively seeks out articles written by technologists and radiographers as a contribution to our home studies program. Sharing information with your peers is not only a worthy endeavor; it furthers the technology and results in improved healthcare overall. It is also a valuable addition to your resume or *curriculum vitae*.

Accreditation (USA) for all home study issues of the *SMRT Educational Seminars* is maintained annually by the SMRT. Back issues may be obtained from the ISMRM/SMRT office, for twenty dollars (USD) each. For a complete list of back issues, please go the SMRT web site: [www.ismrm.org/smrt](http://www.ismrm.org/smrt). If you live outside of the U.S. and have interests or questions concerning accreditation within the country you reside, please contact me at [amsg@stanford.edu](mailto:amsg@stanford.edu) or +1 650 725 9697.

If you are looking to become more involved in the SMRT, please consider writing questions or an article for one of our home studies. The instructions for writing questions will be posted on the SMRT web site in the near future. For additional information, please contact me directly or Jennifer Olson, ISMRM Associate Executive Director, at the office in Berkeley, California, USA ([smrt@ismrm.org](mailto:smrt@ismrm.org), +1 510 841 1899).

Finally, I would like to thank Tom Schubert and all of those fantastic people at **Invivo/MRI Devices Corporation** who support our home studies program, *SMRT Educational Seminars*. Their continuing support of technologist and radiographer education helps to bring quality continuing education to the SMRT membership worldwide. ●

# SMRT Business Meeting Report, 7 May 2005

Gina Greenwood, B.S., R.T. (R)(MR)



The Meeting was called to order at 12:00 EDT by Cindy T. Hipps, SMRT President. She expressed the regrets of President-Elect Karen Bove Bettis who was unable to attend due to illness. Cindy Hipps expressed Karen's regret to miss the meeting. Executive Committee and Policy Board members were introduced.

## Awards Presentations

- Crues-Kressel Award—Presented to **William Faulkner** by John Crues, M.D. and Herbert Kressel, M.D, in whose honor the award is named.
- Fellows of the Section—**Michael Kean** and **Anne Sawyer-Glover**
- Special Recognition—**Jane E. Tiemann**, Retiring Executive Director of the ISMRM

## President's Report

- Cindy Hipps thanked the sponsors and vendors for financially supporting the meeting and Nanette Keck and John Christopher for championing a successful meeting.
- The most celebrated SMRT accomplishment that occurred over the course of the past year was to achieve RCEEM status with the ARRT. The SMRT will now have the ability to award credit to SMRT educational efforts. Cindy offered thanks and recognition to Heidi Berns as chair, as well as the rest of the RCEEM Committee.
- Cindy stated that the SMRT Executive Committee and Policy Board would very much like to see membership numbers increase. Cindy's vision is that one day, the SMRT will have a local chapter in every state. She recognized the Chapter leaders that were present at the meeting, as well as Judy Wood, the Chair of the Local Chapters Committee and Todd Frederick, Membership Committee Chair.

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SMRT President, Cindy T. Hipps and retiring ISMRM Executive Director, Jane E. Tiemann.

- Members were encouraged to consider hosting a SMRT Regional seminar, and to contact Denise Davis, Regional Seminar Chair if interested in doing so. Cindy recognized Jim Stuppino for his efforts as Regional Chair over the past year.
- Special recognition was offered by Cindy to her local professional colleagues and friends who were attending the meeting, and stated that they had all been instrumental in helping and allowing her to grow professionally.
- Cindy encourages all SMRT members to promote Magnetic Resonance Imaging in their own communities and to promote quality education. She assured the membership that the SMRT will be at the forefront of promoting quality education.

### Committee Reports

#### Finance Committee:

Laurian Rohoman, Treasurer

- Thanked sponsors and vendors for their support of the meeting

#### External Relations Committee:

Julia Lowe, Chair

- Member of Associated Sciences Consortium sponsoring RSNA sessions
- Member of Development Committee of Health Professions Network (HPN), which identifies core curriculum for Allied Health Programs
- Active in the Alliance and in supporting the Consumer Assurance of Radiologic Excellence (CARE) Bill. Intent is to gain congressional support for HR1429, which, if passed, will establish national standards.
- Working to support Australian Compulsory Education Requirements

#### Program Committee:

Nanette Keck, Chair

- Thanked attendees for attending the business meeting
- Requested feedback regarding the 30-minute sessions
- Introduced Todd Frederick as the Program Chair for 2006

#### Education Committee:

John Christopher, Chair

- First year for submission and judging of posters conducted online
- Thanked members for submitting posters/papers and encouraged more involvement next year
- Introduced Carolyn Bonaceto as the new Education Committee Chair

#### Nominations/Awards Committee:

Maureen Ainslie, Chair

- Thanked Cindy Hipps for the opportunity to serve and commended her on a successful presidency
- Encouraged membership to approach Cindy Hipps with nominations or to contact Cindy if interested in serving on the Policy Board

#### Regional Seminars Committee:

James Stuppino, Chair

- SMRT hosted eight Regional Seminars this past year
- Developed speakers list to support those planning regionals
- Encouraged members to consider hosting a regional seminar
- Introduced Denise Davis as new Regional Seminars Chair

#### Publications Committee:

Greg Brown, Chair

- Most visible part of the SMRT via *Signals*, home studies, and web site/MRI Tech listserver
- Thanked Julie Strandt-Peay for editing the *Signals* Newsletter
- Thanked Anne Sawyer-Glover for editing the home study publications
- Encouraged members to participate with the "Highlight Your Site" feature of the SMRT web site, and to take the opportunity to introduce themselves to colleagues across the world
- Introduced Mark Spooner as new Publications Committee Chair

#### Local Chapters Committee:

Judy Wood, Chair

- Currently, a total of eleven Local Chapters of the SMRT in existence, with two new chapters forming this past year
- Encouraged members to review the link to Local Chapters on the SMRT web site in effort to determine if there is a Local Chapter in existence in their area
- Encouraged members to consider forming a Local Chapter if there isn't one in existence
- Introduced Cindy Hipps as new Local Chapters Chair

#### Membership Committee: Cindy Hipps for Todd Frederick, Chair

- Membership stands at 1680 members
- Introduced Nancy Hill Beluk as new Membership Committee Chair

#### Proffered Paper Awards

- President's Award— John Totman "Parametric Mapping of Hepatic Perfusion Index in Patients with Colorectal Cancer."
- Paper and Poster Awards were presented. See details in the Annual Meeting Report on page 6.

#### Passing of Gavel to

**Karen Bove Bettis,**  
SMRT President, 2005-2006

Cindy Hipps passed the gavel to Karen Bove-Bettis (accepted on Karen's behalf by Cindy Comeau), and again encouraged members to become involved.

#### Presentation of President's Plaque

to Cindy Hipps, SMRT President, 2004-2005 by Cindy Comeau

#### New Business:

Cindy Comeau, President-Elect

Cindy Comeau informed the membership that the SMRT has formed a new ad-hoc committee. The charge of the committee will be to explore how the SMRT can impact the non-RT MRI educational pathway to ensure that the highest quality of educational standards are met. The committee will be chaired by Luann Culbreth.

**Motion to Adjourn:** William Faulkner  
Seconded by Cindy Hipps

Meeting Adjourned 16:00

# Report on the SMRT 14<sup>th</sup> Annual Meeting 6-8 May 2005, Miami Beach, Florida, USA

Robin Greene-Avison, R.T. (N)(MR) C.N.M.T.



The SMRT 14th Annual Meeting commenced on May 6th 2005 at the Miami Beach Convention Center. Despite the excellent weather Miami afforded the attendees, the program that was offered managed to keep the technologists at the meeting. This alone is high praise indeed for Program Chair, Nanette Keck and Education Chair, John Christopher.

The meeting officially opened on Friday evening with the SMRT Poster Presentation and Walking Tour Reception. This year, 56 posters were presented at the reception. Authoring technologists were on hand at the reception to discuss their work. The event also featured selected highlighted oral discussion presentations.

The didactic portion of the meeting began on Saturday morning and ran through Sunday afternoon. This year, the program chairs designed the program so that the invited faculty provided 30 minute presentations instead of 50 minute presentations. The installation of this tactic served to facilitate more of a variety of topics, speakers and speaking styles. Evaluations of past meetings indicated that the change to shortened presentations was favorable among the technologist audience because it allowed for broader spectrum of topics to be offered.

During the Business Meeting/Awards Luncheon on Saturday, a farewell presentation was made by the SMRT to Jane Tiemann. Jane has been the Executive Director of the ISMRM since the inception of the SMRT. Her leadership and insight has been extremely helpful to the SMRT community and her valued assistance and friendship will be missed.

Proffered Paper presentations received awards as follows. The poster presentation awards can be found on page 9.

The 2005 President's Award Recipient went to John Totman for his paper entitled "*Parametric Mapping of Hepatic Perfusion Index in Patients with Colorectal Cancer.*"

The First Place Clinical Focus Awards (there were two issued as there was a tie): went to Filip De Ridder for his paper entitled "*Functional Kidney MRI with Combined Perfusion and MR Angiography Measurements*" and also to David Stanley for his paper "*Using Ungated FIESTA to Obtain Volumetric and Functional Measurements in the Cardiac MR Exam.*" The Second place Clinical Focus Award was presented to Hina Jaggi for her paper entitled "*Dynamic Female Pelvic Floor Imaging.*" The Third Place Clinical Focus Award was awarded to Jane Johnson for her paper "*New Applications for Color Flow Imaging in MR.*"

The First Place Research Focus Award was presented to Hina Jaggi for her paper entitled "*N-acetylaspartate Whole Brain Spectroscopy.*" The Second Place Research Focus Award was presented to Heather Ducie for her paper entitled "*The Identification of Structural Brain Anomalies Associated with IQ Decline in Preterm Children.*" The Third Place Research Focus Award went to Renee Hill for her paper entitled "*Optimization of High Resolution 3D Volumetric Scans to Differentiate Gray Matter and White Matter at 3T Using Eight Channel Brain Array Coil.*"



Herbert Y. Kressel, SMRT Program Chair Nanette Keck, and John Crues at the SMRT Annual Meeting in Miami Beach.

The Crues-Kressel Award is awarded for outstanding contributions to the education of magnetic resonance technologists. This year, the award was presented to William "Bill" Faulkner from Chattanooga, Tennessee. Bill has been historically highly visible in the arena of technologist education. He continues to support the mission of the SMRT and also develops online teaching software, consults, and publishes articles and books on MR-related educational topics.

The Fellow of the Section Award is awarded to recognize significant and substantial contributions to the mission of the SMRT. There were two recipients of this award in Miami. The first was Michael Kean from Melbourne, Australia. Michael has been a long-standing international member of the SMRT for many years. This is impressive considering the far distance he must usually travel to attend annual meetings. He was a Policy Board member of the SMRT as well as the organizing engine behind numerous Australia/New Zealand meetings.

The second recipient of the Fellow of the Section Award was Anne Marie Sawyer-Glover from Stanford, California. Anne has also contributed significant "woman" hours to the mission of the SMRT since 1994. Over the past decade she has served the Policy Board, chaired numerous Regional Seminars and is celebrated as a Past President. She has made significant contributions to publications directed toward technologist education at the same time as she was serving the above mentioned offices.

On Saturday Evening the SMRT members were treated to the first Past Presidents Reception. Sponsors donated specific support for this event. The reception was held to honor the Presidents who have served the SMRT from the establishment of the Section in 1991. Dr. Frank Shellock emceed this event as each Past President received a gift of appreciation.

The SMRT and the ISMRM Joint Forum was held on Monday, 9 May. The topic of discussion was "*Optimizing Pulse Sequences and Protocols.*" Again this year the Joint Forum was successful in its mission to enable SMRT to actively participate within the main body of the ISMRM. Co-chair Todd Frederick helped to organize the session, which was well attended by both SMRT and ISMRM members.

Thank you to all the organizers, sponsors, presenters and the attendees.

The Program and Education Committees are eager to recruit committee members to help with annual meeting preparation as well as folks interested in speaking. We are now looking forward to organizing next year's 15th Annual SMRT Meeting which will be held 5-7 May 2006, in Seattle, Washington, USA. Details will appear in upcoming *Signals* newsletters and on the SMRT web site at [www.ismr.org/smr](http://www.ismr.org/smr). If you wish to help with this meeting please contact: 2006 Program Chair, Todd Frederick. ●



## Invited Speakers to the 2005 Miami Beach Meeting



Robin Avison, R.T.  
(N)(MR) C.N.M.T.



Sonja K. Belville, A.S.,  
R.T. (R)(MR)



Susan Blaser, M.D.



Silke Bosk, R.T.



Gregory Brown, R.T.



Luann Culbreth, R.T.  
(R)(MR)(QM) M.Ed.



John Crues, M.D.



Cindy R. Comeau, B.S.,  
R.T. (N)(MR)



William Faulkner, B.S.,  
R.T. (R)(MR)(CT)



Steven Falcone, M.D.



Todd Frederick, R.T.  
(R)(MR)



Michael Kean, R.T.



Herbert Y. Kressel, M.D.



Carolyn K. Roth, R.T.  
(R)(MR)(CT)(M)(CV)



Michaela Schmidt, R.T.



Frank Shellock, Ph.D.



Frank Thorton, M.D.



William Woodward,  
A.R.M.R.I.T.

Invited speakers not pictured are:  
Elke Gizewski, M.D. and Michael Zlatkin, M.D.

## 2005 Clinical Focus and Research Focus Oral Presentation Award Winners



2005 President's Award—

**John Totman, D.C.R. (R) M.Sc.**

Department of Radiology, Kings College Hospital, London, United Kingdom

*"Parametric Mapping of Hepatic Perfusion Index in Patients with Colorectal Cancer"*

See page 6 *Signals* Number 52 2005 Issue 1.



1st Place Award (tie), Oral Clinical Focus—

**David Stanley, B.S., R.T. (R)(MR)**

Applied Science Laboratory, GE Medical Systems, Milwaukee, Wisconsin, USA

*"Using Ungated FIESTA to Obtain Volumetric and Functional Measurements in the Cardiac MR Exam"*

See page 11.



1st Place Award, Oral Research Focus—

**Hina Jaggi, M.S., R.T. (R)(MR)**

Department of Radiology, New York University School of Medicine, New York, New York, USA

*"N-acetylaspartate Whole Brain Spectroscopy"*

See page 13.



1st Place Award (tie), Oral Clinical Focus—

**Filip De Ridder, R.N.**

Department of Radiology, Free University of Brussels, Brussels, Belgium

*"Functional Kidney MRI with Combined Perfusion and MR Angiography Measurements"*

See page 12.



2nd Place Award, Oral Research Focus—

**Heather Ducie, B.Sc. (Hons), R.T.**

Institute of Child Health and Great Ormond Street Hospital for Children, London, England, UK

*"The Identification of Structural Brain Anomalies Associated with IQ Decline in Preterm Children"*



2nd Place Award, Oral Clinical Focus—

**Hina Jaggi, M.S., R.T. (R)(MR)**

Department of Radiology, New York University School of Medicine, New York, New York, USA

*"Dynamic Female Pelvic Floor Imaging"*



3rd Place Award, Oral Research Focus—

**Renee Hill, R.T. (R)(MR)**

NIH MRI Research Facility, NINDS National Institutes of Health, Bethesda, Maryland, USA

*"Optimization of High Resolution 3D Volumetric Scans to Differentiate Gray Matter and White Matter at 3 Tesla Using 8 Channel Brain Array Coil"*



3rd Place Award, Oral Clinical Focus—

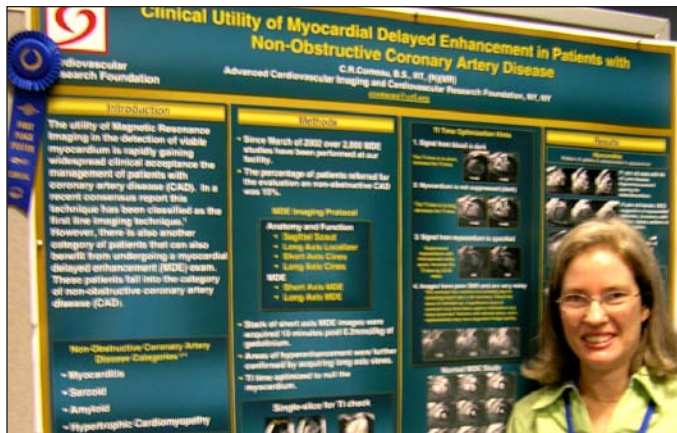
**Jane Johnson, R.T. (R)(MR)**

GE Healthcare, Applied Science Laboratory West, Menlo Park California, USA

*"New Applications for Color Flow Imaging in MR"*



## Award Winning Clinical Focus and Research Focus Poster Presenters at the SMRT Annual Meeting



**2005 1st Place Clinical Poster—**  
**Cindy R. Comeau, B.S., R.T. (N)(MR)**  
 Advanced Cardiovascular Imaging and Cardiovascular Research Foundation, New York, New York, USA “*Clinical Utility of Myocardial Delayed Enhancement in Patients with Non-Obstructive Coronary Artery Disease*” See page 14.



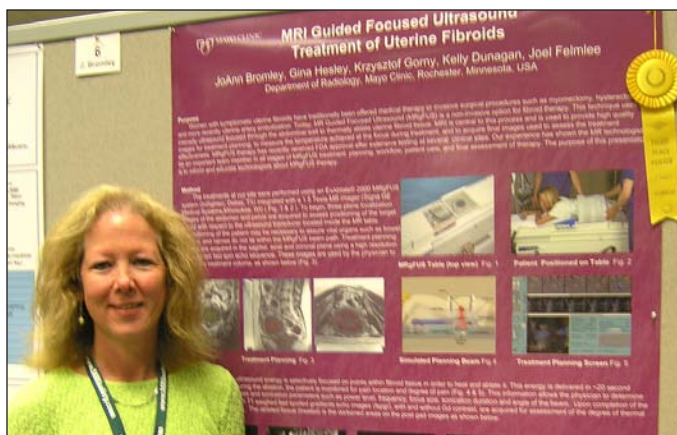
**2005 1st Place Research Poster—**  
**Maureen N. Hood, B.S.N., R.T. (R)(MR)**  
 Departments of Radiology and Radiological Sciences (MNH and VBH) and Pediatrics (TRB), Uniformed Services University of the Health Sciences, Bethesda, Maryland, USA, “*Turner Syndrome: Characterization and Prevalence of Cardiovascular Anomalies by MR*” See page 15.



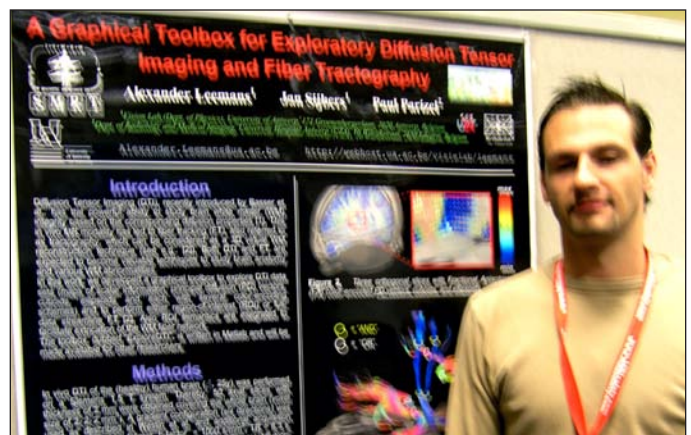
**2005 2nd Place Clinical Poster—**  
**Susan Crisp, R.T. (R)(MR)**  
 Medical Imaging, Sunnybrook & Women’s College HSC, Toronto, Ontario, Canada, “*The Use of Magnetic Resonance Direct Thrombus Imaging in Identifying Patients with High Risk Complicated Plaque*”



**2005 2nd Place Research Poster—**  
**John Totman, D.C.R. (R) M.Sc.**  
 Department of Clinical Imaging, Kings College Hospital, London, UK, “*Evaluation of Synovitis Using Dynamic Contrast-Enhanced Magnetic Resonance Imaging Comparison to the RAMRIS Scoring System*”



**2005 3rd Place Clinical Poster—**  
**JoAnn M. Bromley, R.T.**  
 Department of Radiology, Mayo Clinic, Rochester, Minnesota, USA, “*MRI Guided Focused Ultrasound Treatment of Uterine Fibroids*”



**2005 3rd Place Research Poster—**  
**Alexander Leemans, M.Sc.**  
 Vision Lab, Department of Physics, University of Antwerp, Antwerp, Belgium, “*A Graphical Toolbox for Exploratory Diffusion Tensor Imaging and Fiber Tractography*”

# Report on the 2005 SMRT and ISMRM Joint Forum

Todd Frederick, R.T. (R)(MR), Co-chair, 2005 SMRT and ISMRM Joint Forum



The forum held on Monday afternoon of the 2006 Annual Meeting was a great success. Attendance was high and technologists/radiographers were very well represented. From an informal poll of the audience, it appeared that around half of the attendees were technologists, and the other half a mix of physicians and physicists/scientists. The Forum is an event where the membership of the ISMRM and SMRT come together to discuss common issues and share information. The high attendance from the SMRT membership shows the ISMRM that the Section is active and engaged.

The topic of the Forum was the "Optimization of Pulse Sequences and Imaging Protocols." Gareth Barker, Ph.D., was first to speak. Dr. Barker is a physicist and pulse sequence designer from London, England. He presented an excellent talk on how pulse sequences are programmed, and the process that a programmer must go through in order to design a sequence correctly and safely. Dr. Barker emphasized the safety of the sequences several times, explaining certain safety measures that must be followed in order to protect patients and the MR equipment. He also explained the different components of the MR system and how they are controlled during sequence design and during imaging. The design and programming of pulse sequences is, of course, a complicated endeavor, but Dr. Barker explained the process very well.

Todd Frederick spoke next, offering the audience an idea of how an MR technologist/radiographer optimizes pulse sequences for image quality in the clinical setting. To assess image quality, the technologist needs to decide whether an image has adequate tissue contrast, spatial resolution, and SNR; and whether or not artifacts are present in the image. The technologist then has to determine which pulse sequence parameters should be adjusted based on the image quality factor that they affect. He stated that an understanding of the inter-relationship of all of the pulse sequence parameters, and their respective effects on tissue contrast, SNR, spatial resolution, and artifacts is the most important part of sequence optimization for the technologist.

Achim Gass, M.D., was the next speaker. Dr. Gass is a neuroradiologist from Germany. He explained how an imaging protocol is developed for the neuro anatomy to demonstrate different disease processes.

Gary Israel, M.D., is a radiologist from the Harvard University School of Medicine. Dr. Israel spoke on protocol optimization for imaging of the body. He presented several imaging scenarios for the chest, liver, kidneys, and pelvis.

The Forum was very well received by the attendees, with many questions asked afterward, particularly of the physicians. Hopefully all members of the audience came away with a greater understanding of how individual pulse sequences are designed and optimized, and how imaging protocols are created.



Speakers (l. to r.) Gary Israel, Todd Frederick, Gareth Barker, and Achim Gass.

The Section for Magnetic Resonance Technologists would like to thank the following donors for their generous support of the SMRT Fourteenth Annual Meeting:

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2005 1st Place (tie) Oral Presentation, Clinical Focus—

## Using Ungated FIESTA to Obtain Volumetric and Functional Measurements in the Cardiac MR Exam

David Stanley, B.S., R.T. (R)(MR)<sup>1</sup>, James Glockner, M.D., Ph.D.<sup>2</sup>, and Belinda Li<sup>1</sup>

<sup>1</sup>Applied Science Laboratory, GE Healthcare Technologies; <sup>2</sup>Mayo Clinic, Rochester, Minnesota, USA

### Purpose

Cardiac-gated gradient echo acquisitions have been used for the evaluation of cardiac function for the past several years. Typically these sequences are acquired using a segmented k-space strategy to allow acquisition times for a single slice to fall within a reasonable breath hold (7-20 seconds/slice). Steady state free precession sequences have become the dominant technique for these acquisitions by virtue of their high signal to noise ratio, excellent blood-myocardial contrast, and short acquisition times. These sequences generally provide excellent image quality in most patients, but there are important exceptions, most notably patients with arrhythmias and severe shortness of breath.

FIESTA (Fast Imaging Employing **S**teady-state **A**cquisition) sequence is a fully balanced steady state coherent imaging pulse sequence typically acquired using a cardiac-gated segmented k-space filling method (FIESTA Cine), which requires R-wave registration to initiate scanning. It can also be acquired without eeg gating [Ungated FIESTA]. When used with parallel imaging (ASSET (Array Spatial Sensitivity Encoding Technique) with R = 3], images can be acquired with temporal resolution of 96 msec.

This paper compares standard volumetric and functional measurements of cardiac function obtained with the traditional gated FIESTA sequence to the ungated technique employing parallel imaging.

### Methods

Conventional eeg-gated cine FIESTA and ungated FIESTA sequence were acquired in 12 patients scheduled for clinical cardiac MRI. Examinations were performed on a GE Twin Speed EXCITE 1.5T SIGNA MR system (Milwaukee, Wisconsin, USA).

Cine FIESTA images were acquired using the following parameters: TR 3.1 msec, TE 1.4 msec, 45° flip angle, ±125 kHz bandwidth, 1 excitation (NEX), 8 mm slice thickness with a 1 mm gap, 256 x 160 and a 0.75 phase

FOV. 8-12 slices were acquired in the short axis plane of the left ventricle with one slice per breath hold. Twenty phases were retrospectively reconstructed. Parameters for the ungated FIESTA acquisitions included: TR 3.0 msec, TE 1.3 msec, 45° flip angle, ±125 kHz bandwidth, 0.5 excitation (NEX), 8 mm slice thickness with a 1 mm gap, 192 x 128 and a 0.75 phase FOV, 20 phases for each location and acceleration factor (R) = 3. The same slice locations were acquired for both sequences. Image analysis was performed using standard cardiac MRI software (MASS analysis plus, MEDIS Medical Imaging Systems, Leiden, The Netherlands).

### Results

Ungated FIESTA images encompassing the entire ventricles were obtained in a single breath of 15-20 seconds, which was well tolerated in all patients. Ungated Fiesta images were diagnostic in all cases and could be traced relatively easily, with some limitations caused by ASSET reconstruction artifact in apical slices. End diastolic volume, end systolic volume, stroke volume, and ejection fraction were calculated for both techniques and compared using the standard paired T-test. Right and left ventricular end diastolic volumes had small but significant differences (p < 0.05). All other parameters showed no significant differences between values measured from gated and ungated FIESTA images.

### Conclusion

Preliminary results using ungated FIESTA for cardiac function MR exams are promising. The temporal resolution used in this feasibility project is marginal, but can probably be improved with only minor degradation in image quality. The ungated FIESTA technique allows for much more rapid imaging in patients who have difficulty in suspending respiration or have cardiac arrhythmias while providing comparable volumetric and functional measurements to that of the standard cardiac-gated cine FIESTA. ●

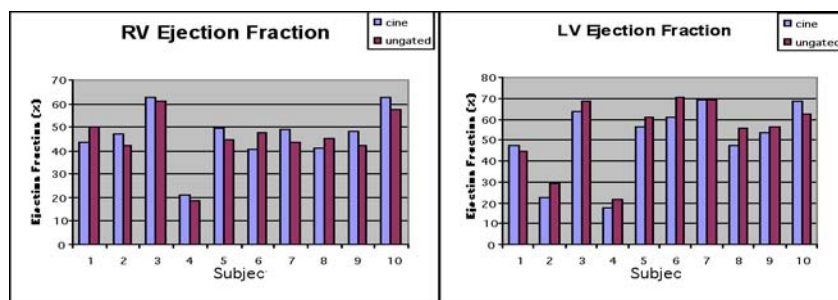


Table 1. Comparison of RV and LV ejection fraction results.



2005 1st Place (tie) Oral Presentation, Clinical Focus–

## Functional Kidney MRI with Combined Perfusion and MR Angiography Measurements

F. De Ridder, R.N., M. Dujardin, M.D., S. Sourbron, Ph.D., P. Van Schuerbeek, Ph.D., S. Makkat, Msc., R. Luybaert, Ph.D., T. Stadnik M.D.

Department of Radiology, Free University of Brussels, Belgium

### Purpose

MR imaging of the kidney with fast pulse sequences has the potential for generating anatomical as well as functional information [1-5]. The aim of this study was to investigate the feasibility of perfusion mapping in a clinical setting and to see whether this technique could be implemented in the MR angiography protocol.

### Methods

The perfusion measurement was performed on a 1.5 T unit (Philips, Intera, The Netherlands) using the body coil on 4 human patients without known renal disease. The protocol was approved by the local ethical board. The perfusion measurement was acquired using a single slice Turbo flash (TR 4.4, TE 2.2, TI 172, FA 50°, matrix 128 reconstructed at 256, NSA 1, slice thickness 4 mm, number of measurements 400, 0.3 s/slice). For perfusion purpose a bolus of 0.05 mmol/kg body weight Gd-DTPA was injected at 2cc/sec by power injector (Spectris, Medrad), assuring a fast and uniform delivery of the bolus. After the perfusion measurement a 3D CE-MR Angiography measurement with bolus tracking technique was performed (TR 5.4, TE 1.4, FA 40°, matrix 192x512, NSA 1, slice thickness 1.5mm), using a second dose of 0.1 mmol Gd-DTPA/kg of body weight. The 2D-perfusion data were post-processed on a personal computer using software written in-house in IDL for Linux (Research Systems, Boulder, Colorado, USA). Signals were converted to tracer concentrations on the basis of a theoretical formula [6]. A test tube of gadolinium in saline solution of 2mM was placed in the field of view during the measurement for gain correction purposes. Parametric maps of relative renal blood flow (rRBF), relative renal volume of distribution (rRVD) and relative mean transit time (rMTT) were calculated as the maximum of the impulse response function IRF, the time integral of the IRF and the ratio rRDV/rRBF with a optimized deconvolution procedure [7]. For the left and the right cortex average rRBF, rRVD and rMTT were calculated on the basis of these maps. These findings were compared to literature values for normal renal cortical perfusion. The 3D

CE-MR Angiography post-processing was performed including image subtraction and maximum intensity projection (MIP).

### Results

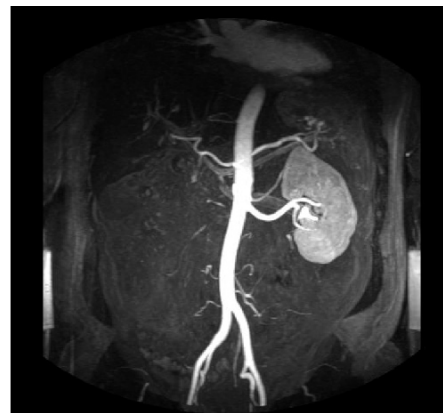
Parametric images with sufficient contrast to noise for well defined cortical ROI delineation were obtained in all patients. No renal stenoses were found on the MRA images. A congenital single kidney was discovered in one patient. Figure 1 and 2 illustrate a typical result for the MRA and the rRBF parametric map in the same patient. The average rRBF was 1.3 ml/min/ml with SD 0.2 ml/min/ml. Mean cortex to medulla ratio was 3 SD 0.4. Average rRVD and rMTT were 0.5 ml/min/ml SD 0.1 ml/min/ml and 24 s SD 5 s. The ratio of cortical/medullary rRBF is near to the literature value [8]. rRBF values are lower than those found in the literature, this is presumably due to dispersion and/or inflow effects. The first bolus of Gadolinium-DTPA had no influence on the angiographic measurement: the overall quality of the angiographic images was excellent and the filling of pyelum and proximal ureter can be appreciated on the MRA images, giving an idea of global renal excretory function but without compromising the MRA images.

### Conclusion

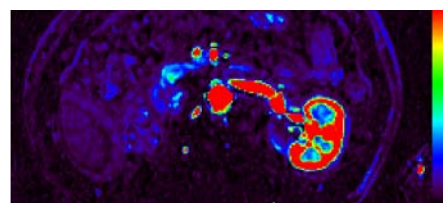
Quantitative renal perfusion measurements combined with CE-MR Angiography has a considerable potential as a non-invasive screening technique for the evaluation of renovascular disease and may provide a complete anatomical as well as physiological evaluation of the renal status with minimal risk to the patient. ●

### References

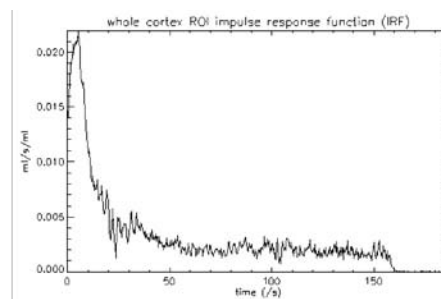
1. Hermoye L. et al (2004) *MRM* 51:1017-1025.
2. Schoenberg S. et al (2003) *MRM* 49:288-298.
3. Aumann S. et al (2003), *MRM* 49:276-287.
4. Pedersen M. et al (2004) *Proc. ISMRM* 12:879.
5. Dujardin M. et al (2004) *Proc. ISMRM* 12:568.
6. Fritz-Hansen T. et al. (1996) *MRM* 36:225-231.
7. Sourbron S. et al (2004) *PMB* 49:3307-3324.
8. Hierholzer K (1999) *Physiologie des Menschen*: 737-776.
9. Ivancevic M. et al (2003) *Proc. ISMRM* 11:149.



**Figure 1.** MRA in a patient with a single kidney. The renal artery and accessory upper polar branch show no stenosis. The presence of contrast in the renal pyelum from excretion of the first bolus does not interfere with MRA quality.



**Figure 2.** Parametric map of rRBF in the same patient with congenital single kidney (colour scale ranges from 0 (black) to 1.2 ml/ml/min (red)). *Editors Note: To see the image in full color please refer to Signals on the SMRT web site [www.ismrm.org/smrt](http://www.ismrm.org/smrt).*



**Figure 3.** Whole cortex IRF (impulse response function: tissue concentration curve standardized for the shape and size of the bolus) for the same patient.





2005 1st Place Oral Presentation, Research Focus–

## N-acetylaspartate Whole Brain Spectroscopy

Hina Jaggi, M.S., B.S., R.T. (R)(MR)

New York University Medical Center, Department of Radiology, New York, New York, USA

### Purpose

Proton MR spectroscopy ( $^1\text{H}$ -MRS) is becoming increasingly important in the evaluation of neurological diseases such as stroke, primary and secondary tumors, epilepsy, multiple sclerosis, infections, trauma and many other neurodegenerative diseases. The most relevant peak of the proton spectrum is N-acetylaspartate (NAA), an amino-acid almost exclusive to viable neuronal cell bodies and their axonal and dendritic extensions, and, therefore, is considered a marker of neuronal integrity.

Current  $^1\text{H}$ -MRS techniques, using single voxel, 2D and even 3D multi-voxel techniques, are restricted to  $<500\text{ cm}^3$  volume of interest (VOI). Moreover, these methods are subject to several limitations such as:

- Contamination by lipid signals from subcutaneous and bone marrow's tissues near the skull.
- Difficulty in delineating the borders and extent of invasion of diffuse and/or irregular pathology.
- Partial-volumes with CSF which may attenuate disease-specific metabolic information.
- Unavoidable repositioning misalignment in serial studies

These limitations can be circumvented by a recently developed  $^1\text{H}$ -MRS technique (ref), which quantifies whole brain NAA (WBNA) concentration. Using this new technique, we investigated the level of NAA in multiple sclerosis (MS) and HIV Infected patients compared to age- and sex-matched healthy controls.

### Methods

Fifteen patients with HIV, 71 with MS and 41 healthy controls underwent WBNA spectroscopy. The amount of NAA in the head,  $Q_{\text{NAA}}$ , was obtained using a non-localizing, non-echo  $^1\text{H}$ -MRS sequence,  $\text{TE}/\text{TI}/\text{TR}=0.0/0.97/10\text{ s}$ . The resultant spectrum was processed manually off-line using custom software. Absolute quantification of  $Q_{\text{NAA}}$ , was done against a reference 3 L sphere of  $1.5 \times 10^{-2}$  mole NAA in water. To account for normal inter-subject head size variations, each  $Q_{\text{NAA}}$  was divided by the brain volume,  $V_{\beta}$ , of that individual to yield the subject's specific WBNA concentration,

$$\text{WBNA} = Q_{\text{NAA}} / V_{\beta} \quad [1]$$

Where  $V_{\beta}$ , the brain parenchymal volume (excluding the CSF) was obtained from proton density (PD) and  $T_2$ -weighted fast spin-echo ( $\text{TR}/\text{TE}_1/\text{TE}_2 = 2500/16/80\text{ ms}$ ) MRI with  $192 \times 256$  matrix,  $220 \times 220\text{ mm}^2$  field of view, 3 mm slice thickness MRI in a 1.5 T scanner. Image segmentation was performed with Udupa *et al.*'s 3DVIEWNIX Software package. Since it is a normalized per-unit-volume metric, WBNA is independent of the brain volume, therefore, suitable for cross-sectional, inter-individual comparisons. A two-tailed Student t-test for non-paired data was used to compare the patients' WBNA levels with those of controls.

### Results

WBNA levels were significantly lower in both HIV and MS patients than in healthy subjects. Specifically, the average  $\pm$  standard deviation (SD) WBNA level was  $11.82 \pm 1.40\text{ mM}$  for HIV,  $10.03 \pm 1.60$  for MS patients and  $12.90 \pm 1.03\text{ mM}$  for normal controls ( $p = 0.032$  and  $p < 0.0001$ , respectively).

### Conclusion

WBNA spectroscopy is an excellent technique to detect global NAA decline in diffuse brain disorders such as MS and HIV. The short acquisition time of only 20 minutes and the easy repositioning yield a quick and highly reproducible measure of the overall disease burden. An early detection of neuronal injury and/or its response to the treatment is critical for developing treatment strategies and monitoring their effectiveness. Therefore, WBNA spectroscopy offers a useful tool to investigate and monitor diffuse and/or multi-focal neurodegenerative diseases. ●



2005 1st Place Poster Presentation, Clinical Focus–

## Clinical Utility of Myocardial Delayed Enhancement in Patients with Non-Obstructive Coronary Artery Disease

Cindy R. Comeau, B.S., R.T., (N)(MR)

Advanced Cardiovascular Imaging and Cardiovascular Research Foundation, New York, New York, USA

### Purpose

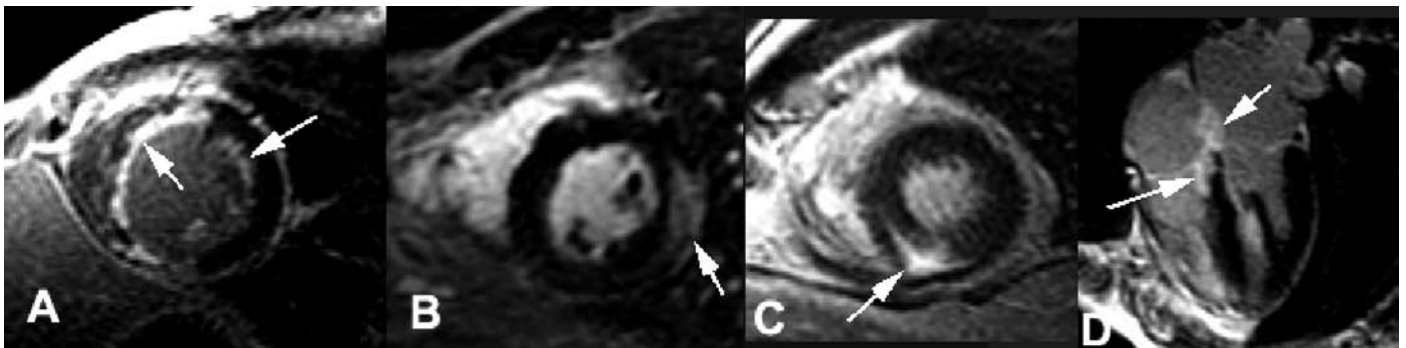
The utility of Magnetic Resonance Imaging in the detection of viable myocardium is rapidly gaining widespread clinical acceptance the management of patients with coronary artery disease (CAD). In a recent consensus report this technique has been classified as the first line imaging technique.<sup>1</sup> However, there is also another category of patients that can also benefit from undergoing a myocardial delayed enhancement (MDE) exam. These patients fall into the category of non-obstructive coronary artery disease. Suspected myocarditis, an inflammation of the myocardium, is a clinical indication for a MDE study. Early detection of the disease can be critical as it can progress to arrhythmias or sudden cardiac death. Other disease states that put patients at risk for sudden death include sarcoidosis, amyloid and hypertrophic cardiomyopathy all of which can be detected by using this technique.<sup>2-4</sup> The purpose of this abstract is to present our clinical experience.

### Method

Since March of 2002 over 2,000 MDE studies have been performed at our facility. The percentage of patients referred for the evaluation of non-obstructive coronary disease was 15%. A routine cardiac functional exam was performed specified by clinical protocol. At 10 minutes short-axis MDE images were acquired perpendicular to the left ventricle from the long axis localizer following administration of 0.2mmol/kg of gadolinium. Areas of hyperenhancement were further confirmed by acquiring long axis views through the abnormality. For the MDE sequence an IR prepped ECG gated gradient echo sequence was employed using the following parameters: TR/TE ~5.4/1.4 ms, flip angle 20°, FOV 38x38 cm, matrix 256x160 slice thickness 8 mm, trigger delay=300. The TI time was optimized to null the normal myocardium appropriately.

### Results

The pattern of uptake in the myocardium in patients with CAD necrosis is very discrete starting in the subendocardial wall (arrows) which can be seen in Image A. Short axis functional cine images showed akinetic wall motion abnormalities corresponding to the areas of infarction (not shown). Image B shows a patient with heterogeneous enhancement (arrow) in the lateral wall which is subepicardial in appearance. This pattern suggests a nonischemic etiology (wall motion normal) such as myocarditis which was confirmed in this patient. Image C shows hyperenhancement (arrow) again sparing the subendocardial wall as this patient was diagnosed with Lyme myocarditis. Image D is a long axis view of a patient with a history of sarcoidosis which now involves the heart causing arrhythmias. The areas of abnormalities involve the atrial septum and basal ventricular septum (arrows) as this is not the typical pattern for CAD necrosis.



### Conclusions

As demonstrated in the above patient samples this technique has a wide range of clinical utility. Patients that present with heart related symptoms without non-obstructive coronary artery disease can benefit from having a MDE study. Obtaining the proper patient history is important to correlate with the imaging results to make the proper diagnosis. Our referring clinicians in our community find this technique to be a very powerful tool in the management of patients with non-obstructive coronary artery disease. ●

### References

1. Pennell DJ, et al. Consensus Panel Report. *JCMR* 2004 Vol.6(4);727-765.
2. Laissy J, et al. *Chest* 2002; 122:1638-1648.
3. Serra JJ, et al. *Circulation* 2003;107:188-189.
4. Moon JCC, et al. *Journal of the American College of Cardiology* 2003;41:1561-7.





2005 1st Place Poster Presentation, Research Focus–

## Turner Syndrome: Characterization and Prevalence of Cardiovascular Anomalies by MR

Maureen N. Hood, M.S., R.N., R.T. (MR)<sup>1,2</sup>, Vincent B. Ho, M.D.<sup>1,2</sup>, Vladimir K. Bakalov, M.D.<sup>3</sup>, Margaret Cooley, B.A.<sup>3</sup>, Phillip L. Van, M.S.<sup>3</sup>, Thomas R. Burklow, M.D.<sup>1</sup>, Carolyn A. Bondy, M.D.<sup>3</sup>

<sup>1</sup>Departments of Radiology and Radiological Sciences (MNH and VBH) and Pediatrics (TRB), Uniformed Services University of the Health Sciences, Bethesda, MD; <sup>2</sup>Diagnostic Radiology Department, Warren G. Magnuson Clinical Center, National Institutes of Health, Bethesda, MD; <sup>3</sup>Developmental Endocrinology Branch, National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, MD USA

### Introduction

Turner Syndrome (TS) is a chromosomal disorder resulting from complete or partial monosomy of the X chromosome [1]. The most common features of women with TS are short stature and gonadal dysgenesis. However, serious clinical presentations can occur due to congenital cardiovascular anomalies such as aortic coarctation and dissection [2-7]. Over the years, the reported incidence of cardiovascular lesions has varied from 23 percent [8] to as high as 45 percent [2]. Variations in incidence are attributable to variations in non-invasive methods used for screening and the types of lesions that they can characterize. Unfortunately, these studies have merely suggested that patients with TS have a wide range of vascular anomalies without any indication of the true prevalence of such lesions in the TS population. This study prospectively evaluated a group of asymptomatic adult volunteers with TS using gadolinium-(Gd) enhanced 3D MR angiography to improve the estimated prevalence and pathogenesis of cardiovascular defects in TS.

### Methods

One hundred adult patients (average age =  $36 \pm 11$  years) with karyotypically proven Turner Syndrome and 27 healthy female volunteers ( $36 \pm 10$  years) provided written informed consent for voluntary participation in this Institutional Review Board approved protocol. Imaging was performed on a 1.5 Tesla MR scanner (Signa, General Electric Medical Systems, Waukesha, Wisconsin, USA) using a phased array coil. Scanning included axial and coronal T1-weighted fast spin echo (FSE). In addition, sagittal or oblique sagittal Gd-enhanced 3D MRA was performed using a fast 3D spoiled gradient echo pulse sequence with a 0.2 mmol/kg dose of Gadolinium (Gd)-chelate contrast media administered via an antecubital vein using an MR compatible injector (Spectris, Medrad, Indianola, Pennsylvania, USA). Post-contrast axial fat suppressed spoiled gradient echo images were also obtained.

A radiologist blinded to each subject's clinical presentation and past cardiovascular history performed evaluation of the MR images for the presence of arterial and venous anomalies. In each subject the maximum anterior-to-posterior dimension (AP), maximum superior-to-inferior dimension (SI), and the maximum right-to-left dimension (RL) of the thoracic cavity were measured on T1-weighted FSE. In addition, the internal thoracic dimension using the equation of a half ellipsoid: thoracic volume =  $\frac{1}{2} \times \frac{4}{3} \times \pi \times SI \times AP \times RL$ , was calculated for each subject. Descriptive statistics and correlations were performed on the data. Additionally, one-way ANOVA was performed on the thoracic data.

### Results

A high prevalence of aortic anomalies was identified in women with TS, including elongation of the transverse arch (ETA, 46%), aberrant right subclavian artery (Ab Rt Sub, 10%), and coarctation (COARC, 10%). Venous anomalies were also prominent, including persistent left superior vena cava (LSVC, 11%) and partial anomalous pulmonary venous return (PAPVR, 12%) (Table 1). The shape of the thoracic cavity in women with TS was significantly different (Table 2). The TS patients were shorter ( $P < 0.00001$ ), had a thicker AP dimension ( $P < 0.0004$ ), and had a smaller RL dimension ( $P < 0.05$ ). However, the thoracic volume was not found to be significantly different.

### Conclusions

Thoracic arterial and venous anomalies are common in TS, occurring in almost 50% of a group not pre-selected for cardiovascular disease. The shape of the thoracic cavity in TS women is also significantly different. Improved recognition of vascular lesions may be important for identification of patients in need of closer cardiovascular monitoring. ●

### References

1. Turner HH. *Endocrinology*. 1938;23:566-574.
2. Dawson-Falk KL, Wright AM, Bakker B, Pitlick PT, Rosenfeld RG. *Australas Radiol*. 1992;36:204-209.
3. Haddad HM, Wilkins L. *Pediatrics*. 1959;23:885-902.
4. Lemli L, Smith DW. *J Pediatr*. 1963;63:577-588.
5. Rainier-Pope CR, Cuninghame RD, Nada AS, Crigler JF. *Pediatrics*. 1964;33:919-925.
6. Emerit I, De Grouchy J, Vernant P, Corone P. *Circulation*. 1967;36:886-905.
7. Van der Hauwaert LG, Fruns JP, Doumoulin M, Logge N. *Br Heart J*. 1978;40:500-509.
8. Mazzanti L, Cacciari E. *J Pediatr*. 1998;133:688-92.

Table 1.	TS (n = 100)	Healthy Vol (n=27)
Aorta		
ETA	46	0
Ab Rt Sub	10	0
COARC	10	0
Venous		
LSVC	11	0
PAPVR	12	0

Table 2. T5		Healthy Vol
RL	232 ± 15*	238 ± 11
SI	177 ± 20*	197 ± 21
AP	154 ± 15*	143 ± 11
Vol	1.32 ± 0.20 x 10-03	1.41 ± 0.23 x 10-3

\* P < 0.05

## 2005 Clinical Focus Poster Presenters



**Mary Ann Breitigam,**  
St. Joseph's Healthcare,  
Hamilton, Ontario, Canada  
*"Assessment of Dynamic  
MRI Perfusion Imaging  
for Determination of Brain  
Tumor Recurrence"*



**Bobbie Burrow,**  
Department of Radiology,  
Emory University School  
of Medicine, Atlanta,  
Georgia, USA  
*"Phased Surface Coil Array  
Prostate MRI at 3T"*



**Myeong Ju Cho,**  
Department of Diagnostic  
Radiology, Seoul National  
University Hospital, Seoul,  
Republic of Korea  
*"Comparative Study of  
T2-Weighted MR Techniques  
Using Breath-Hold, Respiration-  
Triggered and PACE (Prospective  
Acquisition Correction) Techniques  
in Detecting Human Liver Mass"*



**Violet Chua Gek,**  
Department of Neuroradiology,  
National Neuroscience  
Institute, Singapore  
*"Clinical Diagnosis in  
Image Quality of Ultra-fast  
T2-Weighted Sensitivity  
Encoding (SENSE) Technique  
Compared to Standard  
T2-Weighted FSE Sequence"*



**Toni Cormier,**  
St. Joseph's Healthcare,  
Hamilton, Ontario, Canada  
*"Reduced Dose  
Contrast-Enhanced MR  
Venography at 3 Tesla"*  
and *"Vibrant Breast  
Imaging Complementary  
to Mammography and  
Ultrasound"*



**Jane M. Francis,**  
Oxford Centre for Clinical  
Magnetic Resonance  
Research, University of  
Oxford, Oxford, UK  
*"The Role of Cardiovascular  
Magnetic Resonance (CMR)  
in a Case of Potential  
Cardiotoxicity following  
Chemotherapy for Hodgkin's  
Disease"*



**Peter Kappert,**  
Department of Radiology,  
University Medical Center  
Groningen, The Netherlands  
*"Detection of Metastases  
from Prostate Cancer:  
MRI or Scintigraphy"*



**Nondas Leloudas,**  
Northwestern University,  
Chicago, Illinois, USA  
*"Cardiac MRI at Three  
Tesla Overcoming the  
Pitfalls"*



**Michael Macilquham,**  
John Fawcner Hospital,  
Coburg, Victoria, Australia  
*"Head Motion Correction  
Using Radial K-Space  
Filling: Clinical  
Experiences with the  
Propeller Technique"*



**Christine Mancini,**  
National Heart, Lung, and  
Blood Institute, National  
Institutes of Health and  
Surburban Hospital,  
Bethesda, Maryland, USA  
*"Cine Cardiac MR Image  
Quality in Patients with  
Congestive Heart Failure"*



**Sandra Massing,**  
Department of Diagnostic  
and Interventional Radiology,  
University Hospital Essen,  
Essen, Germany  
*"Whole-body MRI vs.  
Whole-body PET/CT in  
Staging of Newly Diagnosed  
Malignant Melanoma:  
Initial Results"*



**Bengt Olsson,**  
Department of MRI,  
University Hospital, Lund,  
Sweden  
*"MRI Examination to  
Measure Bone Volume in  
the Mandible Before Dental  
Implantation"*



**Emma Robertson,**  
Department of MRI,  
University Hospital, Lund,  
Sweden  
*"MRI Examination to  
Measure Bone Volume in  
the Mandible Before Dental  
Implantation"*



**Laurian Rohoman,**  
McGill University Health  
Center, Montreal, Quebec,  
Canada  
*"Uterine Peristalsis:  
A Novel Technique"*



**David Shipp,**  
MRI Department, Monash  
Medical Centre, Southern  
Health, Clayton, Australia  
*"3D Contrast Enhanced  
MR Angiography of Spinal  
Cord for Dural Fistulae"*



**David Stanley,**  
Applied Science  
Laboratory, GE Healthcare  
Technologies, Milwaukee,  
Wisconsin, USA  
*"Current Methods  
and Optimizing TI in  
Myocardial Delayed  
Enhancement Exams"*



**Alain Thoeni,**  
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Hospital Basel, MS MRI  
Evaluation Center, Basel,  
Switzerland  
*"Repositioning Techniques  
for Accurate Reproducibility  
of Follow-Up Brain MRI"*



## 2005 Research Focus Poster Presenters



**Richard Baheza,**  
Vanderbilt University,  
Nashville, Tennessee, USA  
*"Detection of MRI Signal  
Changes Induced by  
Weak Electric Currents:  
Implications for fMRI"*



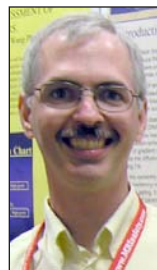
**Greg Brown,**  
MRI Unit, Department of  
Radiology, Royal Adelaide,  
South Australia, Australia  
*"Evaluation of the Gandon  
Method for Measuring  
Liver Iron Concentration  
Method on a Siemens  
Vision Scanner"*



**Cindy Comeau,**  
Advanced Cardiovascular  
Imaging and Cardiovascular  
Research Foundation,  
New York, New York, USA  
*"MRI Detection of Patent  
Foramen Ovale: A Less  
Invasive Alternative  
to Transesophageal  
Echocardiography"*



**Denise Davis,**  
Magnetic Resonance  
Research Center, University  
of Pittsburgh, Pittsburgh,  
Pennsylvania, USA  
*"In-Vivo Structural Imaging  
of a Freshwater Mussel  
(Elliptio complanata)  
Using a 3T Clinical Human  
Scanner"*



**Garry Detzler,**  
Department of Imaging  
Research, Sunnybrook &  
Women's College Health  
Sciences Centre, Toronto,  
Ontario, Canada  
*"Diffusion Tensor Imaging:  
Do You Gate?  
What About 11 Gradient  
Directions versus 35?"*



**Lisa Desiderio,** Department  
of Radiology, University of  
Pennsylvania Medical Center,  
Philadelphia, Pennsylvania,  
USA  
*"Utilizing 3 Tesla (3T)  
Magnetic Resonance Imaging  
(MRI) with Advanced  
Imaging Capabilities for  
Pre-Operative Assessment  
of Patients Diagnosed with  
Primary Brain Tumors"*



**R. Scott Dunn,**  
Imaging Research Center,  
Department of Radiology,  
Cincinnati Children's  
Hospital Medical Center,  
Cincinnati, Ohio, USA  
*"Echocardiography and  
Cardiac MR Imaging at 7T  
in Cardiac Mouse Models"*



**Zahid Latif,**  
MR Research Facility,  
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Detroit, Michigan, USA  
*"Venography at 4T Using  
Susceptibility Weighted  
Imaging (SWI)"*



**Bobbi Lewis,**  
Experimental Neuroimaging  
Section, Laboratory of  
Diagnostic Radiology  
Research, National Institutes  
of Health, Bethesda,  
Maryland, USA  
*"Neuro SENSE Coil and its  
Effect on Quantitative Image  
Analysis"*



**Michaela Jökel,**  
Department of Diagnostic  
and Interventional Radiology,  
University Hospital Essen,  
Essen, Germany, *"Magnetic  
Resonance Coronary  
Angiography Using an  
Intravascular Contrast  
Agent: Comparison of Two  
Different Inversion Recovery  
Sequences"*



**Joanne Muldoon,**  
Department of Imaging  
Research, Sunnybrook &  
Women's College Health  
Sciences Centre, Toronto,  
Ontario, Canada  
*"MR-Targeted Ultrasound  
of Breast Lesions"*



**Caron Murray,**  
Department of Imaging  
Research, Sunnybrook &  
Women's College Health  
Sciences Centre, Toronto,  
Ontario, Canada  
*"Determining Breast Tissue  
Composition with the  
3-Point Dixon Technique" and  
"A Multipurpose Breast MR  
System- A Novel Approach"*



**Sue Rysted,** Mayo Clinic,  
Rochester, Minnesota, USA  
*"Renal BOLD Imaging in  
Clinical Patients: Technique  
and Preliminary Results"*



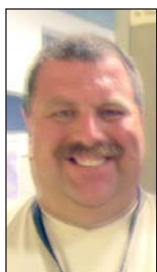
**Annica Sandberg,**  
MRI Unit, Department of  
Neuroradiology, Karolinska  
University Hospital,  
Solna, Sweden  
*"Diffusion- and Perfusion-  
MR (DWI and PWI): Before  
and After Treatment of  
Intracranial Aneurysm"*



**Helle Simonsen,**  
Danish Research Centre  
for Magnetic Resonance,  
Copenhagen University  
Hospital Hvidovre,  
Hvidovre, Denmark  
*"Evolution of Brain  
Edema in Experimental  
Pneumococcal Meningitis"*



**David Stanley,**  
Applied Science  
Laboratory, GE Healthcare  
Technologies, Milwaukee,  
Wisconsin, USA  
*"ENVI: A Novel Technique  
for the Myocardial Delayed  
Enhancement Exam"*



**Wayne Stenzel,**  
Mayo Clinic, Rochester,  
Minnesota, USA  
*"A Comparison of FGRET  
and FIESTA for the  
Evaluation of First Pass  
Myocardial Perfusion"*



**Pamela Vincent,**  
National Heart, Lung, and  
Blood Institute, NIH and  
Surburban Hospital,  
Bethesda, Maryland, USA  
*"Use of Phase Sensitive  
Inversion Recovery (PSIR)  
to Enable Delayed Enhance-  
ment Imaging of Myocardial  
Infarction in an Epidemio-  
logical Study: Insights from  
Quality Assurance in the  
ICELAND MI Study"*



## 2005 Research Focus Poster Presenters (continued)



**Rakesh Sharma**, Department of Chemical & Biomedical Engineering, College of Engineering, Florida State University, Tallahassee, Florida, USA  
*"High Resolution MR Imaging of the Skin Epidermis and Dermis Components and their Image Contrast Properties at 14 Tesla Magnetic Field"* and *"Effect of High Field MRI Magnetic Exposure to Cancer Cell Lines in their Cell Division Behavior"*

PHOTO UNAVAILABLE:

**Hyun Keum Shin**, Department of Radiology, Samsung Medical Center, Seoul, Korea, *"Optimization of High b-Value Diffusion Imaging Using SPAIR Fat Suppression in 3.0T Scanner"*



The Friday Evening Walking Poster Tour provides an opportunity for attendees to informally discuss the presented work and network with colleagues.

*Editor's note:* Thank you to Anne Sawyer-Glover, Mark Spooner, James Stuppino, and Greg Brown for submitting Annual Meeting photographs to *Signals*.

## These Abstract Authors Were Selected to Give Oral Presentations at the Meeting



**Jane Ho, B.Sc. (Hons) R.T.**, Institute of Child Health, University College London, and Great Ormond Street Hospital for Children, London, England, UK  
*"The Relationships Between MRI Findings and Epilepsy in Very Preterm Born Children"*



**Jane Johnson, R.T. (R)(MR)**, GE Healthcare, Applied Science Laboratory West, Menlo Park, California, USA  
*"MR Cholangio-pancreatography (MRCP): High and Low TE Techniques in the Clinical Setting"*

**Anna Kirilova, R.T. (R)(MR)**, Radiation Physics Department, Princess Margaret Hospital, University Health Network, Toronto, Ontario, Canada  
*"Diffusion-Weighted Echo-Planar MR Imaging of the Parotid and Submandibular Glands Before and After Stimulation"*

*Editors Note:* Anna was also selected to give an oral presentation at the meeting but was unable to attend.

## Oral Presentations at the Friday Evening Poster Presentation and Poster Walking Tour Reception



**John Totman, D.C.R. (R), M.Sc.**, Department of Clinical Imaging, King's College Hospital, London, England, UK  
*"Evaluation of Synovitis Using Dynamic Contrast-Enhanced Magnetic Resonance Imaging in Comparison to the RAMRIS Scoring System"*



**Steven Williams, R.T. (R)(MR)**, Department of Radiology, Mayo Clinic, Rochester, Minnesota, USA  
*"MRA in the Detection of Pulmonary Emboli"*



**Belal El Fatehi**, MR Unit, Radiology Department, ULB Hôpital Erasme, Brussels, Belgium  
*"Bilingualism and its Neurocognitive Effects in Primary School Children"*



**Sandra Massing, R.T.**, Department of Diagnostic and Interventional Radiology, University Hospital Essen, Essen, Germany  
*"Continuously Acquired Moving Table Peripheral MRA Compared to Conventional Multi-Station Table Peripheral MRA"*



**SMRT Policy Board, Executive Committee, and Ex-Officio Members.** (Seated front row l. to r.) Judith Wood, Nancy Hill Beluk, Cindy T. Hipps, Heidi Berns, and Anne Sawyer-Glover. (Seated middle row l. to r.) Maureen Ainslie, Laurian Rohoman, Pamela Vincent, Julia Lowe, Vera K. Miller, Denise Davis, Cindy Comeau, and Muriel Cockburn. (Standing back row l. to r.) Gina Greenwood, John Christopher, Carolyn Bonaceto, James Stuppino, Bobbi Lewis, Steven Shannon, Gregory Brown, Todd Frederick, Nanette Keck, Mark Spooner, Julie Strandt-Peay, and Charles T. Stanley. (not pictured: Karen Bove Bettis, Anne Dorte Blankholm, Silke Bosk, Andrew Cooper, Marcia Gervin, Scott Kurdilla, and Wendy Strugnell).

## 2005 SMRT Past Presidents Reception

The Past Presidents of the SMRT were recognized at a gala reception during the Annual Meeting in Miami Beach. The generous donations by **Imaging Education Associates, L.L.C.; Magnetic Resonance Safety Testing Services and the Institute for Magnetic Resonance Safety, Education and Research; National Medical Associates, L.L.C.; and MEDRAD, Inc.** helped support this event for SMRT. Programs were distributed with biographic information about each of the Past Presidents for the reception attendees. Frank Shellock emceed a special ceremony where each Past President was presented with a lovely watch in appreciation of time served. Special thanks go to Cindy Hipps for organizing this very special event honoring the Past Presidents of SMRT.



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1991-1992



Carolyn K. Roth  
1992-1993



Carolyn Pickett  
1994-1995



Luann J. Culbreth  
1995-1996



Karol Handrahan  
1996-1997



Kelly D. Baron  
1997-1998



Anne Sawyer-Glover  
1998-1999



Julie Strandt-Peay  
1999-2000



Robin Greene-Avison  
2000-2001



Heidi Berns  
2001-2002



John A. Kovelski  
2002-2003



Maureen D. Ainslie  
2003-2004



Cindy T. Hipps  
2004-2005



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 Rhonda Walcarus ..... rwalcar@imaging.robarts.ca



# Call For Nominations and Award Candidates

Cindy T. Hipps, B.H.S., R.T. (R)(MR), Past President and Chair, Nominating Committee and Awards Committee



**D**o you believe you can make a difference in the SMRT? As Past President and Chair of the SMRT Nominations and Awards Committees, I think we can all make a difference! I encourage you to consider running for the Policy Board or to nominate one of your colleagues for this position. Each year the membership is presented with a slate of candidates that are members of the SMRT in good standing and who desire to make a difference in the world of MR. The membership is asked to elect five individuals to the Policy Board for a three-year commitment. These individuals will be responsible for various committee activities within the SMRT. The SMRT Standing Committees are Finance, Membership, Nominating, By-laws, Education, Program, Publications, Regional Seminars, External Relations, Awards and Local Chapters. There are also two AdHoc Committees, RCEEM and Educational Standards. Those elected in the next SMRT election will be installed to office at the 15th Annual Meeting to be held in Seattle, Washington, USA, 5-7 May 2006. These volun-

teers give freely of their time to help the organization grow while promoting quality MR education for all SMRT members.

As members of the SMRT, it is our responsibility to see that the organization continues to grow! There are many challenges ahead and we need each member to help us meet these challenges head on so we react and respond in a professional manner. I can assure you that the SMRT will promote the highest quality and standards but we need a strong voice to be heard. Each member makes up that voice that echoes the mission of the SMRT..... quality MR Education for all!

The SMRT membership is also responsible for electing the next President-Elect. This person should have served on the Policy Board in the past, be a member in good standing, and have the ability to lead this organization forward in a professional manner. If you know of someone that would be qualified to fill this position, please forward their name with their permission.

The Awards Committee is responsible for accepting names for the Crues-Kressel Award. This award is presented to an individual that has made outstanding contributions to the education of MR Technologists and it is named after Dr. John Crues and Dr. Herb Kressel for their efforts in forming the SMRT. Other awards include Distinguished Service Award, Honorary Membership Award, and Fellow of the Section. You can find criteria for each of these on the SMRT web site at [www.ismrm.org/smrt/awardsops.htm](http://www.ismrm.org/smrt/awardsops.htm). If you know of someone that meets these criteria, please nominate them for these prestigious awards!

All nominations should be submitted to the committees by 1 September 2005 with the closing date for all nominations being 15 September 2005. This allows time for the ballots to be printed and to be mailed to the membership in October 2005. Please submit nominations to Jennifer Olson at [jennifer@ismrm.org](mailto:jennifer@ismrm.org) or phone: +1 510 841 1899. You may also contact me directly at [cthipps@charter.net](mailto:cthipps@charter.net) or call +1 864 442 7472. So exercise your right to nominate and vote in the next SMRT election! ●

## External Relations Report: RSNA 2005

Julia B. Lowe, B.S.R.T. (R)(MR), Chair, External Relations Committee



**T**he Radiological Society of North America (RSNA) will host the 91<sup>st</sup> Scientific Assembly and Annual Meeting 26 November–2 December 2005 in Chicago, Illinois, USA. The Associated Sciences Consortium of RSNA and the SMRT would like to extend an invitation to you to attend RSNA 2005. The Consortium was formed in 1980 by associated sciences groups in radiology in a conjoint educational effort. The SMRT joined this effort in 1997. Together we strive to foster collaboration and cooperation among such member organizations in meeting the continuous educational needs of our membership. The RSNA strongly supports the activities related to the Consortium. Each year the Consortium plans new and relevant refresher courses and symposia to be presented during RSNA. This year the Associated Sciences Consortium will celebrate our 25th Anniversary, and we invite you to celebrate with us.

The first graduates of the Radiologic Assistants, (R.A.) Education Programs will be expected to join the U.S. Workforce this year. The ARRT's R.A. Certification exam is planned for introduction in September, 2005. The Consor-

tium is offering a Refresher Course on the **Development of the Radiologist Assistant: An Education and Certification Update** on Monday, 28 November, at 10:30.

Other interesting Refresher Courses include **PET/CT and SPECT/CT Fusion Imaging: Technical and Clinical Highlights**, **Joint Commission on Accreditation of Healthcare Organizations National Patient Safety Goals** and other interesting courses. The Associated Sciences Symposium is entitled **Radiology's Leaders: Challenges of the Future** and will include three speakers on the topics of Radiology as a business, a clinical practice and the challenges of education in Radiology. A panel discussion will follow.

Another exciting topic offered at RSNA 2005 includes Integrating the Healthcare Enterprise, (IHE). The IHE initiative is playing a crucial role in the dialogue to develop a national health information network. The IHE was established six years ago by RSNA and the Healthcare Information and Management Systems Society, (HIMSS). IHE was among 13 health and information technology organizations that, in January, presented the Bush Administration with recom-

*Continued on page 22 ➡*

mendations for establishing an electronic national patient health record.

Please join your fellow SMRT members at RSNA 2005 and enjoy Refresher Courses, infoRAD Workshops, Hands-on Workshops, Financial Management Seminars, Technical Exhibits, and much more. Don't forget to stop by the SMRT exhibit booth. Look for our location in the Technical Exhibitors listings under the Associated Sciences Booths.

General Advance Registration for RSNA 2005 is now open. You may register by visiting [RSNA.org](http://RSNA.org), e-mail [reginfo@rsna.org](mailto:reginfo@rsna.org), or call +1 800 381 6660 ext. 7862. **The final advance registration date is 11 November 2005.** International Delegates' invitation letters are available at [RSNA.org](http://RSNA.org). International attendees should apply for visas by July or August, 2005. The online "Meeting Program" will be posted later in the year on [rsna2005.rsna.org](http://rsna2005.rsna.org). ●

## SMRT Approved as Recognized Continuing Education Evaluation Mechanism (RCEEM) by the American Registry of Radiologic Technologists (ARRT)

Heidi Berns, M.S., R.T. (R)(MR)

**T**he Board of Directors of the ARRT met in January and reviewed the application packet completed by the SMRT RCEEM Ad Hoc Committee. This packet asked the ARRT for permission to become recognized as a RCEEM. The ARRT Board of Directors approved the SMRT application.

The application packet addressed seven major points and had to meet the following criteria:

1. The SMRT must be national in scope.
2. The SMRT must be radiology based.
3. The SMRT must be willing to evaluate CE activities developed by any technologist within a given discipline.
4. The SMRT must be able to demonstrate the need for an additional RCEEM.
5. The SMRT must provide a description of policies and procedures used in the evaluation of CE activities.
6. The SMRT must show evidence of sufficient resources and experience to provide for a valid and reliable evaluation of CE activities.

The SMRT is targeting September 2005 for implementing the RCEEM start-up and will phase in the implementation, beginning with acceptance of applications of lectures and programs.

We are looking forward to working with the ARRT on this very important endeavor and will work closely with them to follow the appropriate guidelines. As with any project of this magnitude, much work and effort will be required. Reviewers will be needed in order for this project to be successful. If interested in becoming a reviewer in the RCEEM process, please feel free to contact Heidi Berns, Committee Chair, at [heidi.berns@mercyic.org](mailto:heidi.berns@mercyic.org) or at +1 319 339 3801. ●



## External Relations Committee Report Annual Meeting

Julia B. Lowe, B.S.R.T. (R)(MR), Chair, External Relations Committee



**T**he External Relations Committee, (ERC) worked hard to prepare for the Policy Board Meeting that was held prior to the SMRT 14th Annual Meeting in Miami Beach, Florida. With the help of Cindy Hipps, the ERC accomplished some important goals over the year. We look forward to reaching more goals with the new SMRT President, Karen Bove Bettis.

An important goal of the ERC and the SMRT is to be proactive in the enactment of the Consumer Assurance of Radiologic Excellence, (CARE) Bill. In March, 2005 Cindy Hipps, (now Past President) and Julie Lowe, Executive Liaison attended the Alliance for Quality Medical Imaging and Radiation Therapy Meeting. The Alliance was created 7 years ago by health care workers, educators and other related bodies to promote the CARE Bill. The Alliance met in March to discuss the Health and Human Services, (HHS) draft regulations which include the Standards for Accreditation of Educational Programs for Magnetic Resonance Technologists. These revisions will be considered by the SMRT Policy Board and Executive Committee before the next Alliance Meeting. Upon the enactment of the CARE Bill these regulations written by the Alliance will be ready for HHS to adopt. The CARE Bill was re-introduced to the 109th Congress in the 1st Session 2005 as H.R. 1429. Below is a link that provides updated information on the CARE Bill: <https://www.asrt.org/content/news/pressroom/pr2005/seventhann050321.aspx> If you wish to write to your Congressman and emphasize the importance of the CARE Bill. You may use this form letter provided by the ASRT: [http://www.asrt.org/content/GovernmentRelations/CAREBill/Sample\\_Letter\\_Congress.aspx](http://www.asrt.org/content/GovernmentRelations/CAREBill/Sample_Letter_Congress.aspx)

The ERC reached another goal this year by laying the groundwork for an SMRT member to be involved in The Coalition of Allied Health Leadership 2006 Program. The program, designed to develop future leaders in the areas of education, practice and research, is supported through a federal award from the Department of Health and Human Services, the Health Resources and Services Administration, Bureau of Health Professions, Division of State, Community and Public Health. The Leadership Program will consist of two, week long workshops held in Washington D.C. In addition, participants will be involved in activities, including projects, and are encouraged to attend the Association of Schools of Allied Health Professions, (ASAHP) Annual Conference. Look for this opportunity later in the year on the SMRT Website.

A new goal of the ERC and the SMRT is to offer the SMRT home studies to other countries as continuing educational credits. Wendy Strugnell, the External Relations Committee, Global Relations Chair is working with the Australian Institute of Radiography (AIR) and the SMRT in reaching this goal. Many countries are now requiring continuing educational credits for Magnetic Resonance Technologists and Radiographers. Please contact the SMRT for updated information. ●



# Report on SMRT Northwest Regional Educational Seminar

Denise Echelard, R.T. (R)(MR), Northwest Regional Co-Chair

Vern Terry, R.T. (R)(MR), Northwest Regional Co-Chair



The one day SMRT Northwest Regional Educational Seminar began on a foggy Sunday morning, February 27th, at Valley Medical Center. Over ninety attendees gathered to learn and network in the beautiful Medical Arts Center's auditorium. A continental breakfast was provided along with a latte cart sponsored by GE Healthcare.

We began the morning session covering stroke and neuro-imaging from a neurologist's point-of-view with Aaron Heide, M.D., head of the stroke program at Valley Medical Center. The educational presentation gave us a look into how other services use the information MRI provides in the long range care of patients.

Anne Sawyer-Glover, B.S., R.T. (R)(MR), of Stanford University's Lucas Research Center, graciously stepped in and brought the attendees up to speed on the latest MRI Safety guidelines and updates. The information provided in Anne's presentation is more relevant than ever as more diverse scanners are entering into the mainstream market. Her movie presentation was a big hit.

Following a short break, Daniel Heller, M.D., of Tacoma Radiology Associates, spoke on entry level physics. Starting with the basics of nuclear spin, Dr. Heller took us through to image reconstruction. Michael Coles, B.A., R.T. (R)(MR), of First Hill Imaging, continued with the physics theme with mid-level physics and into the more advanced applications of parallel and SENSE imaging available today. Michael's creative explanations and low key presentation style made for a very accessible lesson.



Over ninety technologists attended the SMRT North West Regional Seminar in Renton, Washington, USA.



With the sun coming out in time for lunch many of the attendees took advantage of the mild early spring weather to head outside.

We reconvened after lunch to hear Frank Wessbecher, M.D., of Tacoma Radiology Associates, present his popular talk on interesting neuro case studies. He covered a wide range of the diagnoses that technologists see on a daily basis and provided pointers and techniques to best demonstrate certain disease processes all the while entertaining the crowd.

Lee Mitsumori, M.D., of the University of Washington, gave an introduction to "*Cardiac MRI and Myocardial Viability*." His presentation provided a general overview of anatomy, axes, and segments that are vital to imaging. He went on to address the challenges in imaging the heart and how the newer software applications are used to correct for them. Dr. Mitsumori wrapped up with cardiac viability and how MRI compares with other modalities in answering the cardiologist's questions.

After a short afternoon break of decadent desserts, Chandra Byrd, R.T. (M)(MR), with Confirma, Inc., spoke on "*Breast Imaging*." Her comprehensive talk covered from what equipment a site would need, to patient prep and onward to imaging and breast biopsy. She also discussed the role that CAD programs play in standardizing post processing, as well as the time-savings they provide.

Berlex Imaging sponsored Jeff Maki, M.D., of the University of Washington Medical Center and the Veterans' Administration Hospital, in his talk on the advances in peripheral MRA. After a brief over-view of peripheral vascular disease and past imaging techniques he dove right into the latest applications being used today. Jeff addressed parallel-imaging and the use of SENSE parameters, as well as typical protocols and the varying contrast timing, and single vs. double injections. He demonstrated the various techniques he uses today and provided a look ahead into what the future could hold for new coil models and the use of compression. The seminar wrapped up with a final round of door prizes given to attendees and a round of applause for all of the speakers and sponsors.

We would like to thank GE Healthcare, Philips Medical Systems, Siemens Medical Solutions, ONI Medical Systems, Invivo, Berlex Imaging, Tyco Healthcare, and Dr. Frank Shellock for their donations and assistance with this seminar.

A special thanks to all of the speakers, who so graciously gave of their time and expertise, to Bill Marcella and Valley Diagnostic Imaging for hosting this meeting, and to Jennifer Olson for all the encouragement and assistance with this and all of our seminars. It was a well received seminar with many positive responses from the attendees for all who participated. ●

# Helping Children Cope with the MR Examination

Michael Kean, Chief MR Technologist, Royal Children's Hospital, Parkville, Australia

Leanne Hallowell, Chief Educational Play Therapist, Royal Children's Hospital, Parkville, Australia

This article represents the views of its authors only and does not reflect those of the International Society for Magnetic Resonance in Medicine and are not made with its authority or approval.



The pediatric MR environment is unique in that MR Technologists and associated ancillary staff are continually confronted with the challenges of dealing with a diverse group of patients and their parents. Our objectives or concerns as MR technologists are patients that will co-operate for the duration of the examination; patients and their families to have a positive experience; and for the experience to have minimal impact on the efficient operation of the MR facility. In reality, these expectations are not always possible due to the patient's previous negative experiences within the medical system, inability to comprehend what we require of them, language or culture differences, developmental or medical conditions that limit a child's ability to understand what we are doing, parental and patient anxiety, claustrophobia and importantly, the patient's age. In pediatric MR, the challenge is providing a flexible patient focussed package to deal effectively with these patients. This package may assist them to develop coping skills to successfully complete the MR examination without the need for sedation. Educational play therapists and other specially trained health professionals (MR technologists, nurses or alternative therapy practitioners) can help these patients get through the MR examination successfully. There have been numerous publications, some outlined in the bibliography relating to the use of alternative techniques, to help children become acquainted with all aspects of the unique MR environment prior to undergoing the examination. Each unit that uses ancillary staff or MR technologists to intervene prior to the MR examination tackles the challenge of helping the children in a different manner ranging from simple techniques such as calico doll play, printed material produced by the MR centre, special video or 3D computer generated models, diversion therapy, aroma therapy and in some larger centers like ours, a "mock MR" that is comprised of a shell from a real magnet and has a sound system so the children become accustomed to the noise the MR system makes.

For any program to succeed it is essential that MR staff assess each referral to determine if a certain patient may benefit from some degree of intervention prior to their MR examination.

It is important to develop an early rapport with these children and their parents. The simplest approach is for the person who will be responsible for the intervention to telephone the parents to discuss the appointment and importantly to ascertain any specific issues for the child or the parent, which need to be dealt with during the practice session. The issues for each child and their parent will more than likely be focussed around a common theme. Anxiety, concern about the possible results, noise of the unit, feelings

of claustrophobia, developmental delay, autism, and ADHD are factors which have been shown to be reasons that clinicians have felt that children would struggle to cope with a non-general anaesthesia (GA) MR. Additionally for many children the possibility of requiring contrast, which means they will need to be cannulated, or previous negative experiences can make the MRI intervention problematic for them.

On the day of the MR examination, the staff member initially works with the child and their parent showing them an example of the unit, the simplest approach would be for



Distracting techniques are used during cannulation.



A prepared pediatric patient awaits his MRI.



the unit to produce a small picture book that would then be unique to their particular MR unit. Our book is a short story of a young girl who undergoes an MR, using pictures of our hospital's MR unit. During this part of the session, the staff member explains what the MR does, how it scans the images and describes how the child is prepared for the scan. The noise of the unit, the use of headphones and of any surface coils are explained and discussed; where practicable the child should also become familiar with the noises generated in the MR. The child and their parent should then be given an opportunity to ask any questions they may have or to discuss fears or feelings.

Children are taught skills to help them cope during their MR. For some children this may be simple relaxation techniques, for others it may be more complex and they are taught techniques of imagery they may be able to draw on while in the unit, which help them to remain calm. The language used by any staff member dealing with children should be developmentally appropriate and is permissive. What is clear from our experience and that of others is that it is essential to inform the child and their parent of ALL aspects of the examination because part of the relationship we are building with these people is one of trust and once we have lost this trust, future examinations may be difficult. Children are not told what they have to do. It is explained in such terms as, 'when you are relaxed and comfortable, we will let you go into the unit,' or 'when the technologists tell you what a great job you are doing, you will be able to say "thank you."' The intervention is carried out with the belief that the child will cope and get through the procedure, rather than with the negative belief that this child will not be able to cope. Children are given choices where possible, to encourage a sense of control, such as being invited to choose their video.

Developing the appropriate communication skills is often the more difficult aspect of pediatrics. It is important that the MR technologist that places the child on the table engages the child in friendly conversation to help gain their trust. This can be as simple as discussing the music or video that they have chosen and then explaining each step of the procedure to them. Once the child is in the scanner it is imperative that this friendly dialogue is maintained.

Children must also become aware that they will not be left alone and that a parent has a role to play in the process. They are shown where their parent will stand and that, where possible, their parent will be able to touch them during the MR.

For those children who require contrast, a medical play preparation session is included to explain and give skills to allow the child and their parent to cope with such. The use of topical anaesthetic creams and diversion therapy are crucial elements to gaining a successful and less traumatic IV insertion.

Many of the children who have had a practice MR have gone on to have a number of clinical MR scans and have used the skills they have learned in other environments, where coping strategies have been required. ●

## References

1. Kleiber, C., & Harper, D. C. (1999). Effects of distraction on children's pain and distress during medical procedures: a meta-analysis. *Nursing Research*, 48(1), 44-49.
2. Lukins, R., Davan, I., & Drummond, P. (1997). A cognitive behavioural approach to preventing anxiety during magnetic resonance imaging. *Journal of Behavior Therapy & Experimental Psychiatry*, 28(2), 97 - 104.
3. Marshall, S., Smith, M., & Weinberger, E. (1995). Perceived anxiety of pediatric patients to magnetic resonance. *Clinical Pediatric (Phila)*, 34(1), 59-60.
4. McIsaac, H. K., Thordarson, D. S., Shafran, R., Rachman, S., & Poole, G. (1998). Claustrophobia and the magnetic resonance imaging procedure. *Journal of Behavioural Medicine*, 21(3), 255-268.
5. Pressdee, D., May, L., Eastman, E., & Grier, D. (1997). The use of play therapy in the preparation of children undergoing MR imaging. *Clinical Radiology*, 52(12), 945-947.
6. Quirk, M. E., Letendre, A. J., Ciotto, R. A., & Lingley, J. F. (1989). Evaluation of three psychologic interventions to reduce anxiety during MR imaging. *Radiology*, 173, 759-762.
7. Rushforth, H. (1999). Practioner Review: Communicating with Hospitalised Children: Review and Application of Research Pertaining to Children's Understanding of Health and Illness. *Journal of Child Psychology and Psychiatry*, 40(5), 683-691.
8. Selim, M. (2001). Effect of pre-instruction on anxiety levels of patients undergoing magnetic resonance imaging examination. *Eastern Mediterranean Health Journal*, 7(3), 519-525.
9. Smart, G. (1997). Helping children relax during magnetic resonance imaging. *MCN American Journal of Maternal Child Nursing*, 22(5), 236-241.
10. Stanford, G. (1991). Beyond honesty: Choosing language for talking to children about pain and procedures. *Children's Health Care*, 29, 261-262.
11. Tye, V., Fairclough, D., Fletcher, B., Leigh, L., & Mulhern, R. (1995). Children's distress during magnetic resonance imaging procedures. *Child Health Care*, 24(1), 5-19.
12. Zastowny, T. R., Kirschenbaum, D. S., & Meng, A. L. (1986). Coping skills training for children: effects on distress before, during and after hospitalization for surgery. *Health Psychology*, 5(3), 231-247.

## MR Safety at 3-Tesla: Bare Metal and Drug Eluting Coronary Stents

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This article represents the views of its author only and does not reflect those of the International Society for Magnetic Resonance in Medicine and are not made with its authority or approval.

**P**atients with coronary artery disease are often treated by percutaneous transluminal coronary angioplasty (PTCA). Re-narrowing at the angioplasty site, or restenosis, occurs in as many as 50% of patients following PTCA. Therefore, after coronary artery intervention, either a bare metal or drug eluting stent is placed in an effort to prevent restenosis. There is considerable attention focused on the use of drug eluting stents to prevent coronary artery restenosis that tends to occur in a substantial number of patients following stenting with "bare" devices. Studies have reported that drug eluting stents reduce the incidence of target vessel failure compared to uncoated metallic stents. As such, drug eluting stents are now used on a widespread basis (upwards of 80%) in patients with coronary artery disease.

Recently, MR safety information has been obtained for several bare wire and drug eluting coronary stents, which have been reported to be safe for patients undergoing MR procedures at 3-Tesla or less (i.e., based on assessments of magnetic field interactions and MRI-related heating). These coronary artery stents include the following:

**Endeavor Drug Eluting Coronary Artery Stent (Medtronic Vascular)**—Through non-clinical testing, the Endeavor stent has been shown to be MRI safe at field strengths of 3 Tesla or less, and a maximum whole body averaged specific absorption rate (SAR) of 2.0 W/kg for 15 minutes of MRI. The Endeavor stent should not migrate in this MRI environment. MRI at 3-T or less may be performed immediately following the implantation of the Endeavor stent. Non-clinical testing has not been performed to rule out the possibility of stent migration at field strengths higher than 3-Tesla.

In this testing, the stent produced a maximum temperature rise of 0.5 degrees C at a maximum whole body averaged SAR of 2.0 W/kg for 15 minutes of MRI. MR imaging quality may be compromised if the area of interest is in the exact same area or relatively close to the position of the stent.

**TAXUS Express Paclitaxel-Eluting Coronary Stent (Boston Scientific Corporation)**—Through non-clinical testing, the TAXUS Express stent has been shown to be MRI safe at field strengths of 3 Tesla or less, and a maximum whole body averaged specific absorption rate (SAR) of 2.0 W/kg for 15 minutes of MRI. The TAXUS Express stent should not migrate in this MRI environment. MRI at 3-T or less may be performed immediately following the implantation of the TAXUS Express stent. Non-clinical testing has not been performed to rule out the possibility of stent migration at field strengths higher than 3-Tesla.

In this testing, the stent produced a maximum temperature rise of 0.65 degrees C at a maximum whole body averaged SAR of 2.0 W/kg for 15 minutes of MRI. The effect of heating in the MRI environment was similar for overlapping bare metal stents (2 to 5-mm overlap at the ends), made of the same stainless steel material and having the same stent design. The effect of heating in the MRI environment on stents with fractured struts is not known. The temperature rise of 0.65 degrees C for 15 minutes is calculated to result in an increase in cumulative drug release of 0.001% of the total dose.

MR imaging quality may be compromised if the area of interest is in the exact same area or relatively close to the position of the stent.

**Liberté Coronary Artery Stent (bare metal coronary artery stent, Boston Scientific Corporation)**—The Liberté Stent has been shown to be MR safe at field strengths of 3 Tesla or less, and a maximum whole body averaged specific absorption rate (SAR) of 2.0 W/kg for 15 minutes of MR imaging. The Liberté Stent should not migrate in this MR environment. MR imaging at 3-T or less may be performed immediately following the implantation of the Liberté Stent.

In this testing, the stent experienced a maximum temperature rise of 0.65 degrees C at a maximum whole body averaged SAR of 2 W/kg for 15 minutes of MR imaging. The temperature rise was observed to be similar for comparable bare metal overlapping stents (2 to 5-mm overlap at the ends). Heating has not been determined for fractured struts.

MR imaging quality may be compromised if the area of interest is in the exact same area or relatively close to the position of the stent.

This stent has not been evaluated to determine if it is safe in MRI systems with field strengths greater than 3 T.

**TAXUS Liberté Paclitaxel-Eluting Coronary Stent (Boston Scientific Corporation)**—Through non-clinical testing, the TAXUS Liberté stent has been shown to be MRI safe at field strengths of 3 Tesla or less, and a maximum whole body averaged specific absorption rate (SAR) of 2.0 W/kg for 15 minutes of MRI. The TAXUS Liberté stent should not migrate in this MRI environment. MRI at 3T or less may be performed immediately following the implantation of the TAXUS Liberté stent. Non-clinical testing has not been performed to rule

Continued on page 23 ➡



out the possibility of stent migration at field strengths higher than 3 Tesla.

In this testing, the stent produced a maximum temperature rise of 0.65 degrees C at a maximum whole body averaged SAR of 2.0 W/kg for 15 minutes of MRI. The effect of heating in the MRI environment was similar for overlapping bare metal stents (2 to 5-mm overlap at the ends), made of the same stainless steel material and having the same stent design. The effect of heating in the MRI environment on stents with fractured struts is not known. The temperature rise of 0.65 degrees C for 15 minutes is calculated to result in an increase in cumulative drug release of 0.001% of the total dose.

MR imaging quality may be compromised if the area of interest is in the exact same area or relatively close to the position of the stent.

(Note: "TAXUS" is the trademark name on the drug coating, and refers to the drug eluting coating addition to the bare metal stent. As such, when there is the addition of the drug eluting coating, it will be referred to as the TAXUS and then the specific name of the stent. For example, TAXUS Express stent. The bare metal stent does not contain the TAXUS prefix.)

**CYPHER Sirolimus-eluting Coronary Stent (Cordis Corporation/Johnson and Johnson)**—Through non-clinical testing, single and two overlapping CYPHER Stents have been shown to be MRI safe at field

strengths of 3 Tesla or less, and a maximum whole body averaged specific absorption rate (SAR) of 4.0 W/kg for 15 minutes of MRI. Single and two overlapping CYPHER Stents should not migrate in this MRI environment. Non-clinical testing has not been performed to rule out the possibility of stent migration at field strengths higher than 3-Tesla.

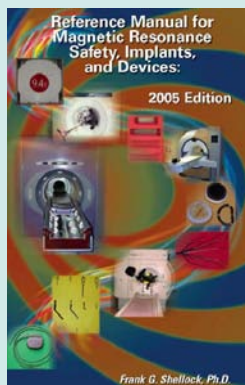
In this testing, single CYPHER Stents up to 33-mm in length produced a temperature rise of less than 1 degree C, and two overlapped 33-mm length CYPHER Stents produced a temperature rise of less than 2 degrees C at a maximum whole body averaged specific absorption rate (SAR) of 4.0 W/kg for 15 minutes of MRI. The effect of heating in the MRI environment for stents with fractured struts is not known. The effect of heating in the MRI environment on the drug or polymer coating is not known.

MR imaging quality may be compromised if the area of interest is in the exact same area or relatively close to the position of the stent. ●

(Note: This statement applies to all currently marketed CYPHER Stents in the United States.)

## Reference

1. Shellock FG, Forder J. Drug eluting coronary stent: In vitro evaluation of magnet resonance safety at 3-Tesla. *Journal of Cardiovascular Magnetic Resonance* 7:415-419, 2005.



**The Reference Manual for Magnetic Resonance Safety, Implants and Devices: 2005 Edition** is an indispensable textbook for radiologists, MRI technologists, and facility managers. This annually-revised, internationally acclaimed textbook series is a comprehensive resource that includes up-to-date guidelines and recommendations for MRI safety based on the latest peer-reviewed publications. This manual is also the only comprehensive source of information for implants and devices tested for safety in the MRI environment. "The List" now contains tabulated information for more than 1,300 implants and devices, including data for over 300 objects tested at 3.0-Tesla or higher.

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## 2006 SMRT Annual Meeting Invitation

Todd Frederick, R.T. (R)(MR), 2006 SMRT Program Committee Chair



**T**he SMRT Program Committee is already preparing for the 2006 Annual Meeting in Seattle, Washington. The 2005 meeting in Miami Beach, Florida, USA, was a great success, and we will carry that success over to an exciting program in Seattle.

The meeting will start on Friday evening 5 May 2006 with the popular Poster Exhibit and Walking Tour Reception. The work that technologists/radiographers put in to the proffered papers and abstracts is amazing. You will want to see the posters and spend the evening in casual conversation with your colleagues. Please consider submitting a poster or abstract yourself, and participating in the sharing of knowledge and information from your site. Dates and deadlines will be announced soon, and information is always available on the SMRT web site at [www.ismrm.org/smrt](http://www.ismrm.org/smrt).

The SMRT Annual Business meeting will take place over lunch on Saturday, 6 May. This is an important meeting where the membership is updated on the activities that the Section has been working on the previous year, and for the upcoming year. New officers are also recognized and installed at this meeting. As an SMRT member, you do not want to miss this important meeting.

The didactic program will be held on Saturday and Sunday. As in previous years we will offer a great mix of topics and speakers. The 2006 Program Committee will be looking over the evaluations from the 2005 meeting and strive to create a program that will meet or exceed the expectations of the SMRT Membership.

Registration for the SMRT Annual Meeting also includes an invitation to the ISMRM/SMRT forum on Monday afternoon, 8 May. This forum is a collaboration between the both organizations, and brings together information from technologists, scientists, and physicians.

As you can see, the 2006 Annual Meeting will be packed with important meetings, informative educational sessions, and lots of great opportunities to network with your colleagues. Put these dates on your calendar now and plan to meet us in Seattle in 2006! ●



## ISMRM/SMRT CALENDAR

### SMRT Northeast Regional Seminar

6 August 2005

University of Pittsburgh Medical Center,  
Pittsburgh, Pennsylvania, USA

### SMRT Southeast Regional Seminar

17 September 2005

St. Joseph's Hospital,  
Atlanta, Georgia, USA

### SMRT Canadian Regional Seminar

24 September 2005

Sunnybrook & Women's College Health Services  
Center, Toronto, Ontario, Canada

### ISMRM Workshop on MR Spectroscopy for Neuropsychiatric Disorders

15-17 October 2005

The Fairmont Banff Springs Hotel,  
Banff, Alberta, Canada

### SMRT Northeast Regional Seminar

22 October 2005

Brigham & Women's Hospital,  
Boston, Massachusetts, USA

### ISMRM Workshop on MR Safety: Update, Practical Information and Future Implications

5-6 November 2005

Hilton McLean Tyson's Corner,  
McLean, Virginia, USA

### SMRT West Regional Seminar

12-13 November 2005

Stanford University, Stanford, California, USA

### SMRT 15<sup>th</sup> Annual Meeting

5-7 May 2006

Seattle, Washington, USA

### ISMRM 14<sup>th</sup> Scientific Meeting and Exhibition

6-12 May 2006

Seattle, Washington, USA

For more registration information,  
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