

Special Issue Year In Review



"My goal is to be aware of each chair's ideas, deadlines and difficulties so that I can help them achieve their committee's goals."

Julia Lowe, B.S., R.T. (R)(MR)

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With my year as President almost half over, it seems as though we were just having our SMRT Annual Meeting in Stockholm, Sweden. We enjoyed a wonderful program in May, with record attendance during the meeting. Many of us also attended sessions during the week of the Joint ISMRM & ESMRMB Annual Meeting, including the ISMRM/SMRT Joint Forum addressing "Safe Exposure Limits for Staff and Patients." We used this time to catch up with old friends that we have made with members of the SMRT over the years, or to become acquainted with new friends that we met while attending SMRT meetings around the world.

Since being back from Stockholm in May, the SMRT has been involved in many educational activities such as the planning of Regional Educational Seminars and Chapter meetings in North America, the United Kingdom and New Zealand. The opportunity to attend a Regional Educational Seminar at different times and locations throughout the year,

offers an alternative for those not able to attend an SMRT Annual Meeting. Our Indiana SMRT Local Chapter held the President's Regional Educational Seminar at the Columbus Regional Hospital in September. We offered an exceptional program that was attended by MR technologists from a wide area for a very affordable rate. There are Regional meetings planned throughout the year in North America, Europe, Australia and New Zealand that allow technologists/radiographers to learn the latest MR techniques, while offering continuing education credits or CPD.

The SMRT External Relations Co-Chair, [Charles Stanley](#), has been busy with the Associated Sciences Program planning, which will be presenting refresher courses at RSNA 2010. The SMRT is a member of the Associated Sciences Consortium that plans courses for RSNA. The members of the Consortium have many resources from which to plan their program, and as a result, they are one of the most well attended courses of RSNA.

The Annual Meeting Program Chair, [Carol Lee](#) and her committee, have been very busy planning the two-day SMRT Annual Meeting that will be held in Montréal, Québec, Canada, 7–8 May 2011. This will be a very special event for the SMRT and MRI professionals because it marks the 20th anniversary meeting of the SMRT and the 30th anniversary of clinical MRI. A special event has been planned by our Publications Chair, [John Totman](#), for the Poster Walking Tour that will include a "History of MRI" presentation.

The SMRT Publications Committee is always busy! [Julie Strandt-Peay](#) and the home office staff published the [Signals](#) Newsletter which highlights the Annual Meeting in Stockholm, the 2010 Award Recipients and the Regional Meetings that were held since the last [Signals](#) issue and much more. Julie is excited

to present the new online version of the [Signals](#) Newsletter. We will be able to give you the latest SMRT news as it happens on the SMRT website. [Anne Sawyer](#) has recently published the SMRT *Educational Seminars*, Volume 13, Number 3: "Phase Contrast MR Imaging: Techniques & Applications." Anne is always working on finding the next topic for a Home Study and question-writers for the post-test. If you are unable to attend the Annual Meetings or Regional Educational Seminars, the home study program is a great way to receive education and CE credits/CPD credits. The *Educational Seminars* program material provides great references in your scanner control room!

The SMRT presents many more things to look forward to such as the "Call for Papers" for the Annual Meeting which is extended from the Education Committee. Watch for

the announcement that will be coming up at the end of the year inviting MR technologists and radiographers to submit their work for peer review and the chance to present their work at the SMRT Annual Meeting that will be held in Montréal. There is also an opportunity for MRI students and new MRI professionals to submit abstracts and be considered for the John A. Koveleski Award for Professional Development. Join us on-line at the SMRT MRI Technologist List Serve to ask an MR question or to offer professional advice. Whether you are an MR student, new professional or a seasoned MRI technologist/radiographer, the SMRT always has educational information and professional news to offer you. 



Editor's Letter

Julie Strandt-Peay, B.S.M., R.T., (R)(MR), FSMRT
Editor, [Signals](#)

"This issue is a look back at the year in review and is intended to give the reader an overview of the many educational activities of the SMRT."

Welcome to this special publication of the SMRT. Since 1991 the SMRT has been publishing a newsletter for members and friends. Beginning in 1993, quarterly issues were produced and mailed as a hard copy piece. Following the 2007 Annual Meeting [Signals](#) has evolved to an electronic posting of the newsletter on the SMRT website. This has enabled the SMRT to implement good economic and ecological practices, without reducing member benefits.

I am pleased to announce that coming soon; [Signals](#) will no longer be limited to quarterly updates but will be a part of the SMRT website, enabling news to be posted for you as events occur. As a member, you will find that access to [Signals](#) no longer requires a password, allowing you to keep up-to-date with activities and events in a more convenient process. The new web-based [Signals](#) will be more compatible with other pages on the site, thus eliminating redundant and outdated information.

This issue of [Signals](#) is a look back at the year in review and is intended to give the reader an overview of the many educational activities of the SMRT, the leadership and those recognized for their contributions. Your suggestions and feedback are welcome and can be sent to: www.smrt@ismrm.org.

Happy Reading! 



About Membership in the SMRT

Ben Kennedy, B.App.Sc., (MIT), MMRT
Membership Committee Chair

The Section for Magnetic Resonance Technologists (SMRT) of the International Society for Magnetic Resonance in Medicine (ISMRM) is the leading non-profit organization that provides an international forum for education, information and research in magnetic resonance for MR technologists and radiographers throughout the world.

The SMRT was established by technologists, clinicians and scientists of the ISMRM as a forum for technologists to share their expertise and educational resources, with the common goal of improving healthcare for people world-wide.

As an organization, we are committed to promoting world-wide communication and cutting-edge dissemination of MR developments. The objectives of the SMRT are to advance the education, training and strive to promote a high level of knowledge and professionalism in the field of MR technology and radiography.


Benefits of Membership

- Reduced fees for all accredited SMRT and ISMRM Annual Meetings, Workshops and Regional Seminars worldwide;
- Quarterly accredited *Educational Seminars* home study articles specific for the MR technologist/radiographer;
- Earn all of your continuing education credits electronically on the SMRT website. Complete the quarterly *Educational Seminars* and the Electronic Home Studies post quiz and receive your CE Certificate of Completion all online;
- Full library of all back issues of the SMRT accredited *Educational Seminars* home studies are available for purchase;

- SMRT Continuing Education Credit Activity Report, receive an annual record of all your CE credits earned through SMRT educational programs;
- On-line access to all past recorded SMRT and ISMRM Annual Meetings and Workshops;
- Reduced subscription rate to the ISMRM journals: *Journal of Magnetic Resonance Imaging* (JMRI) and *Magnetic Resonance in Medicine* (MRM);
- Join any of the 18 ISMRM Study Groups for free; and
- Online SMRT and ISMRM Membership directory.

Additional Advantages of Membership

- As a member of SMRT, you will contribute to the challenging field of one of the most operator-dependent imaging modalities used in medicine today;
- Access to the premier international MR community to enhance your knowledge and share valuable innovations with your peers;
- Easy access to online accredited continuing education opportunities;
- Attend our Annual Meeting or one of the Local Chapter Meetings and build networks that will enhance MR information sharing, while making valuable connections in your profession;
- Network with fellow SMRT members and colleagues on the SMRT MR List Serve, the best known MRI forum in the world. Find answers to your most pressing questions or learn from the expertise of a network of professionals working around the globe;
- Read the SMRT *Signals* electronic newsletter – The information to keep current on SMRT news, MR safety and upcoming events; and
- SMRT welcomes those new to the field of MR and the experienced MR professional.

Please visit the SMRT website for additional membership information: www.ismrm.org/smrt. 

SMRT Officers and Policy Board Members 2010–2011

Julia B. Lowe, B.S., R.T. (R)(MR)

President, Executive Committee Chair

Charles T. Stanley, R.T. (R)(CT)(MR)

President-Elect, External Relations Committee Co-Chair

Pamela S. Vincent, MPA, R.T. (R)(M)(CT)(MR)

Past President

Vera Miller, B.S., R.T.

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Colleen A. Hammond, R.T. (R)(MR)

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Publications Committee Chair

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

(ex officio), Publications, Signals Newsletter, Editor

Anne Sawyer, B.S., R.T. (R)(MR), FSMRT

(ex officio) Publications, Home Studies Sub-Committee, Editor

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

(ex officio) RCEEM Ad-Hoc Committee Chair




Annual Meeting Invitation

Carol Lee, B.S., R.T. (R)(CT)(MR)
Chair, 2011 Program Committee



The Program and Education Committees would like to invite MR technologists and radiographers from around the world to attend the SMRT 20th Annual Meeting: Celebrating 20 Years of MR Educational Excellence in Montréal, Québec, Canada, 7–8 May 2011, in conjunction with the 19th ISMRM Annual Meeting and Exhibition. We are excited about the wonderful program

which will include a diverse range of topics and outstanding international speakers. The SMRT provides a forum for education, information, and research and strives to establish and maintain a high level of professionalism in the field of MR. Those seeking to expand their knowledge in this ever-changing imaging modality are invited to join us for this exciting weekend of

education and networking with colleagues and friends from around the world. We have a special MR History Presentation and Poster Reception planned for Friday evening, 6 May. We hope to see each of you in Montréal. Please refer to the SMRT website for the latest meeting program information. www.ismrm.org/smrt. 



Education Committee Update

Maryann Blaine, MAT, B.S., R.T. (R)(MR)
Chair, 2011 Education Committee

Call for Papers Deadline: 16 December 2011


The SMRT Education Committee is currently preparing for another record number of abstract submissions for the upcoming Annual Meeting in Montréal, Québec, Canada. The Chairs of the SMRT Program and Education Committees are pleased to announce the “Call for Papers” for our 20th Annual Meeting and we hope that you will consider sharing your work with your fellow professionals in the form of an oral or poster presentation. These Proffered Papers and Poster Presentations continue to be an integral component of the SMRT Annual Meeting in its commitment to promoting the dissemination of information regarding current and emerging technological advances.

An important change this year is the

revision of the John A. Koveleski Award for Professional Development. The Education Committee and the newly formed Subcommittee for Professional Development invite MRI students, graduate students and MR radiographers/technologists practicing less than three years to submit abstracts for the John A. Koveleski Award. This award will be presented for the first time at the SMRT 20th Annual Meeting. Qualification will be determined by a resume/CV submitted by the author and the deadline for abstract submissions is 1 February 2011.

At the time that John Koveleski was the SMRT President in 2002, he was asked what he would like to see the SMRT accomplish in 2002 and in the future. John's response

was, “I'd like to see a continuation of international growth and also growth from the 'grass roots' technologists—those working in the trenches at outpatient centers, etc., that represent well over 90% of the technologists employed in the field.” John recognized that each member played a role in the future success and growth of the SMRT, and as a result he played a vital role in the professional development of many technologists.

We hope many of you will begin sharing your ideas and discoveries early in your career as a first step in your professional development. Please consider this your personal invitation to contribute by submitting an abstract for the John A. Koveleski Award for Professional Development. 

SMRT 20th Annual Meeting: Celebrating 20 Years of MR Educational Excellence PROGRAM

7–8 May 2011, Montréal, Québec, Canada

SMRT Poster Reception and Special MR History Presentation – Friday, 6 May 2011, 18:00-20:00

Time	Saturday, 7 May 2011 • 07:45–17:00
06:30	Registration
07:45	Welcome & Announcements Julia B. Lowe, B.S., R.T. (R)(MR) SMRT President 2010-2011 Carol Lee, B.S., R.T. (R)(CT)(MR) SMRT Program Chair 2010-2011
Forum 1: Cardiac MRI Moderator: Mercedes Pereyra, MBA, B.S., R.T. (R)(CT)(MR)	
08:00	Challenges in Setting up Cardiac Services Cindy R. Comeau, B.S., R.T. (N)(MR), FSMRT
08:40	Cardiovascular MR: Physics & Applications Gerhard Laub, Ph.D.
09:20	Clinical Cardiovascular MRI J. Paul Finn, M.D., Ph.D.
10:00	Break
Forum 2: Technical Updates Moderator: Lisbeth (Betsy) Sestina, B.S., R.T. (R)(MR)(CT)(M)	
10:20	Tips for Scanning Children Glenn Cahoon, B.App.Sc., Dip.Ed., M.App.Sc.
10:50	Body & Cardiac MR at 7T Thoralf Niendorf, Ph.D.
11:20	SMRT Annual Business Meeting
12:00	Lunch
Forum 3: Proffered Papers/President's Award Paper Moderator: Barry Southers, BRST, R.T. (R)(MR)	
12:45	Proffered Papers/President's Award Paper
Forum 4: Emerging Technologies Moderator: Titti Owman, R.T. (R)(CT)(MR)	
13:45	Practical Approach to MR Spectroscopy Anna Simeonov, M.Sc., R.T. (R)(MR)
14:15	MRI Guided Focused Ultrasound Charles T. Stanley, R.T. (R)(CT)(MR)
14:45	Break
Forum 5: Physics & Technology Moderator: John Totman, M.Sc., D.C.R. (R)	
15:00	Historical View of the Fundamental Physics of MR Peter Morris, Ph.D., M.A.
15:40	Physics: Advanced Sequences William Faulkner, B.S., R.T. (R)(MR)(CT), FSMRT
16:20	Artifacts Robert V. Mulkern, Jr., Ph.D.
17:00	Announcements/Close

Time	Sunday, 8 May 2011 • 07:45-17:00
07:00	Registration
07:45	Welcome & Announcements Charles T. Stanley, R.T. (R)(CT)(MR) SMRT President 2011-2012 Carol Lee, B.S., R.T. (R)(CT)(MR) SMRT Program Chair 2010-2011
Forum 6: Neuro MRI Moderator: Colleen Hammond, R.T. (R)(MR)	
08:00	Spinal Tumours Raquel del Carpio-O'Donovan, M.D.
08:40	Advanced Neuro Imaging Max Wintermark, M.D.
09:30	Clinical fMRI Stephen E. Jones, Ph.D.
10:00	Break
Forum 7: Body MRI Moderator: Ashok Saraswat, M.S., B.Ed, R.T. (R)(MR)	
10:20	Optimal Body MRI/MRA Imaging Bobbie Burrow, R.T. (R)(CT)(MR)
11:00	Optimal MR Body Imaging Diagnosis Diego Martin, M.D., Ph.D., F.R.C.P.
11:40	Prostate Imaging & Spectroscopy Jurgen J. Fütterer, M.D., Ph.D.
12:20	Lunch
Forum 8: Musculoskeletal Imaging Moderator: Muriel Cockburn, D.C.R., B.Sc. (Hons)	
13:00	Proffered Papers
13:30	SMRT Awards Presentation
13:45	Hip MRI to Include FAI James M. Linklater, M.D., M.B.B.S.
14:15	MRI Evaluation of the Athlete Mark Schweitzer, M.D.
14:45	Break
Forum 9: MR Safety Moderator: TBA	
15:00	MR Conditional Pacemakers Emanuel Kanal, M.D., F.A.C.R.
15:30	NSF Update & New Guidelines Emanuel Kanal, M.D., F.A.C.R.
16:10	Making Your MRI Department Safe Anne Marie Sawyer, B.S., R.T. (R)(MR), FSMRT
17:00	Announcements/Adjourn



MR Imaging Now and Into the Future

2010 Annual Meeting Review

The 2010 SMRT Annual Meeting was held 1–2 May 2010 in Stockholm, Sweden, with a record number of participants

attending. For a complete report please see the *Signals* Newsletter posted on the website: www.ismrm.org/smrt.



Julia Lowe, SMRT President, presents the gavel to Pamela Vincent, Past-President.



From left to right: Maureen Hood, Cindy Comeau, Vera Miller, Sonja Robb-Belville, Maryann Blaine and Janice Fairhurst enjoy the SMRT Annual Meeting

SMRT



SMRT 2010 Award Recipients

The SMRT recognizes those individuals who have made significant contributions to the organization.



John Posh, R.T.(R)(MR)

2010 Recipient of The Crues Kressel Award

This award is given to recognize outstanding contributions to the education of magnetic resonance technologists.



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

2010 Recipient of the Honorary Member Award

This award is given to recognize extraordinary achievement and an exceptional level of service and support for the Section and mission of the SMRT.



Denise Echelard R.T., (R)(MR)

Posthumous 2010 Recipient of the Distinguished Service Award

This award is given to recognize outstanding contributions and extreme level of effort and service to the operation, effectiveness, and good reputation of the SMRT.



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

2010 Recipients of the Fellow of the Section Award

This award is given in recognition of significant and substantial contributions to the mission of the SMRT.



Maureen N. Hood, M.S., R.T., (R)(MR), R.N., FSMRT



Presidents' Regional Educational Seminar

Julia Lowe, B.S., R.T. (R)(MR)

Editor's note: The SMRT provides educational seminars, hosted by members within a geographic area, with support from the central office in Berkeley, California, USA. Here is a report from one of those events.

I wanted to express my gratitude to everyone that was a part of the SMRT President's Regional held on 11 September 2010 at the Columbus Regional Hospital in Columbus, Indiana, USA. We had a very successful event thanks to great speakers that presented relevant and unique topics including [Charles Stanley](#), the SMRT President-Elect, who always manages to

with the vendor representatives and watch a demonstration at the vendor displays.

After lunch [Dr. Mark Lowe, Ph.D.](#) gave a presentation on the research currently being done by his group at the Cleveland Clinic Foundation including DTI, fMRI and Resting State fMRI. That afternoon we heard a very relevant talk on Clinical Neuro Imaging emphasizing stroke presented by [Dr. Vincent](#)

hard to facilitate this event and it really turned out to be a great day. Thanks to all of the vendors that participated: Bracco Diagnostics Inc., IMRSER, Lantheus Medical Imaging, Toshiba Medical Systems and West Physics. We had a great time giving away door prizes to attendees in between each lecture. We had donations from local merchants in the town of Columbus and the Lifeline Helicopter Crew that made up some great gift bags.

[Mathews](#) of Northwest Radiology Network. [Dr. Jeff Proudfoot](#), DVM

Head Veterinarian of the Indianapolis Zoo gave a talk on Diagnostic Imaging at the Indianapolis Zoo Veterinary Hospital.

After seeing images of African lions, rockhopper penguins, boas and more

(and especially the lion

cubs) I'm fairly certain that every technologist in the auditorium wanted to leave their profession and work for [Dr. Proudfoot](#) that day.

Our Co-chairs, local MR technologists [Amy Burt](#) and [Molly Scheidt](#) and the SMRT home office worked very



SMRT President, Julia Lowe and SMRT President-Elect, Charles Stanley at the President's Regional Educational Seminar.


educate while making us laugh. No early morning MRI conference would be complete without a physics lecture and [Dr. Chen Lin, Ph. D.](#) from Indiana University School of Medicine was an excellent guide to K space.

[Dr. Trenton Roth, M.D.](#) also of the Indiana University School of Medicine presented an MSK talk that was truly insightful to the technologists. Also that morning we saw a presentation on Disaster Recovery in Hospital Situations that was presented by [Bill Algee, B.S.R.T. \(R\)](#) and a presentation on MRI Accreditation by [Zubair Abassi, M.S., DABR](#).

During the lunch break there was plenty of time to relax outside and socialize with technologists from other areas. We were able to chat



Larry Friggle, Co-chair and South Central Indiana Local SMRT member; Julie Lowe, South Central Indiana Local SMRT Acting President and Local Co-chair; Chris Faghihi, South Central Indiana Local SMRT Acting Secretary and Co-chair; Steve Low, South Central Indiana Local SMRT Acting Treasurer and Local Co-chair.

I want to thank and congratulate [Steve Low](#), [Chris Faghihi](#) and [Larry Friggle](#) for co-chairing our first Regional hosted by our Local South Central Indiana SMRT Chapter and helping to make it a great success! Thank you to all of the MR Professionals that participate in these educational seminars. Thank you for recognizing the value and importance of education. 



Lisa Oakes from Lantheus Medical Louisville, KY representative giving an Ablavar demonstration.



Chapter Chat

John Totman, D.C.R., (R), M.Sc.
Publications Committee Chair

Editor's note: The SMRT supports the formation of Local Chapters for the purpose of education and networking. Organizers of local meetings are encouraged to share their events in the Chapter Chat column. Publications Committee Chair, John Totman serves as reporter and shares his personal as well as professional experience.

The British Chapter of ISMRM was well attended this year with over 250 delegates present for the three busy days of talks. The meeting was held 1–3 September 2010, at Nottingham University.

The meeting started with a session run jointly with the Institute of Physics in Medicine and Biology (IPeM) discussing the use of off label and non-CE marked software, which can encompass anything which can be used in diagnosis down to a humble spreadsheet. This was followed by a workshop on the use of hyperpolarisation and tours of Nottingham, England 7T whole body facilities. The next two days were split into sessions encompassing spectroscopy, fMRI Methods and Applications, Quantitative Methods in Translational MRI, MRI Physics, Clinical MRI, Molecular Imaging, MRI in Cancer and finally MR Hardware. As with all meetings, often the networking is almost more important and useful than the presentations themselves and this was the case as virtually every UK MR research centre was represented.

For me the highlight of the conference was at the reception for the conference dinner. My son, our first child, had been born just ten days earlier and I was totally exhausted so whilst the rest of the attendees stood and talked I was sitting alone at the sidelines. An older lady approached and asked if she could join me and sat down commenting on how tired I looked. I explained the circumstances and showed her photographs of my baby. We spoke for some time about her children and grandchildren and she offered me advice and reassurance. The conversation drifted and she told me that it had been her wedding anniversary the previous evening and her worries that most of the younger people present wouldn't recognise her husband and the things he had achieved. How it seemed such a short time ago that she had been present at 5 o'clock in the morning with just two others, while her husband had climbed into a machine for the first time, after being warned by a doctor friend that he thought it might do him permanent harm. And how many hours later having

produced an image of her husbands' abdomen, they rush off to present it at a conference that same day (the first MR abdomen image produced).

At that point we were interrupted as we were ushered in to be seated for the meal. The opening speech was made by Professor Peter Morris (one of the other two people present that night, the other was his then girlfriend and now wife), he spoke for some time and ended by pointing out that every person was at most only two supervisors removed from the guest of honour at the meal. He highlighted just some of the massive contributions he had made and he asked we raise our glasses to toast Sir Peter and Lady Mansfield, the Lady I'd had the pleasure of speaking to earlier, who I think needn't have worried about the members of that particular audience having ever not recognising her husband and his contributions to our field! 






SMRT Educational Seminars Home Study Program

Anne Marie Sawyer, B.S., R.T., (R)(MR), FSMRT
Editor
SMRT Educational Seminars
Home Study Program

“The topics include a variety of interests from basic physics and principles to clinical applications and anatomy and physiology atlases.”

For the past thirteen years, the SMRT home studies have provided our members with a convenient way to obtain continuing education (CE) credits. Quarterly issues containing several articles provide up to four credits awarded through the completion of a quiz that accompanies each home study. The articles, selected by members of the SMRT publications committee, are obtained from peer-reviewed journals or written specifically for the home study publication by technologists, scientists or

clinicians working in the field of magnetic resonance imaging (MRI). The quiz is written and expertly reviewed by members of the publication committee, volunteers from the SMRT and ISMRM membership or selected clinicians. The topics include a variety of interests from basic physics and principles to clinical applications and anatomy and physiology atlases. Recent issues include “MR Imaging of the Liver”; “Contrast-Enhanced Musculoskeletal MRI”; and “Techniques in Cardiovascular MRI.” These

recent issues are available to members in both printed and electronic format. As a method to provide an increased number of CE credits to the membership without increasing costs, electronic-only home studies are now available through the SMRT website. Future plans include the ability to complete all quizzes online thereby reducing time and cost to the SMRT members as well as increasing the number and variety of electronic-only issues. 

Vol.	No.	CE	Home Studies Title
1	1	3.5	Functional MRI: Capabilities & Limitations
1	2	3.5	Concepts in MR Physics
2	1	3.5	Considerations in Low Field MRI
2	2	3.0	Directions in Basic Cardiac Imaging
2	3	3.0	Directions in Advanced Cardiac Imaging
2	4	1.5	The Basics of Magnetic Resonance Angiography
3	1	3.0	Introduction to Spectroscopy
3	2	1.0	Renal MR Imaging
3	3	3.0	A Primer on MR Pulse Sequences
3	4	2.5	Artifacts Encountered in Abdominal MRI
4	1	3.0	Safety Aspects in MRI
4	2	3.0	Directions in MRI of the Liver
4	3	2.0	MR Techniques in the Evaluation of the Uterus
4	4	3.0	Fundamental Principles for MR Imaging of the Brain
5	1	2.5	Atlas of Cranial Neuroanatomy
5	2	2.0	MRI of the Ankle & Foot
5	3	3.0	MR Imaging of the Breast
5	4	1.0	Diffusion-Weighted Imaging of the Brain
6	1	1.0	Directions in MRA of the Abdominal Aorta & Lower Extremities
6	2	3.5	Fundamental Principles of MR Imaging of the Head, Neck & Spine
6	3	1.5	Advances in Interventional MRI
6	4	1.0	Diffusion-Weighted MR Imaging of the Pediatric Brain
7	1	2.0	The Role of Neuroimaging in the Diagnosis of Alzheimer's Disease
7	2	2.5	Cariovascular MRI: Update I

Vol.	No.	CE	Home Studies Title
7	3	2.5	K-Space in the Clinic
7	4	3.0	MR Imaging & Spectroscopy of the Prostate
8	1	1.0	Atlas of Knee Anatomy
8	2	2.0	Cardiovascular MRI: Update II
8	3	2.5	Update: Safety in MR Examinations
8	4	2.0	Parallel MR Imaging
9	1	3.0	MRI of Breast Cancer: Update I
9	2	2.5	MR Atlas of the Shoulder
9	3	3.0	Exploring Magnetic Field Strengths: Challenges & Opportunities
9	4	2.0	MRI of Breast Cancer: Update II
10	1	4.0	MR Imaging of Perfusion
10	2	3.0	MR Imaging Artifacts: Appearance, Cause & Cure
10	3	4.0	Techniques in Cardiovascular MR Imaging
10	4	3.0	MRI of the Brain
11	1	4.0	Update: Musculoskeletal MRI
11	2	2.5	Contrast Media in MRI Examinations
11	3	2.0	Head & Neck MRI at 3.0T
11	4	3.0	MR Imaging of the Abdomen
12	1	3.0	Contrast-Enhanced Musculoskeletal MR Imaging
12	2	3.0	Neuro MRI: Principles & Protocols
12	3	2.0	MR Imaging of the Spine
12	4	3.0	MR Imaging of the Liver
13	1	3.0	MR Imaging Sequences: Gradient-Recalled Echo (GRE)
13	2	3.5	Techniques in Cardiac MR Imaging
13	3	2.5	Phase Contrast MR Imaging: Techniques & Applications



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www.IMRSER.org
www.MRIsafetybook.com

(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)

Insulin Pumps

An insulin pump allows the replacement of slow-acting insulin for basal needs with a continuous infusion of rapid-acting insulin. By using an insulin pump, the patient can typically match the dosage of insulin to lifestyle and activities, rather than adjusting those to the body's response to insulin injections. The advantages of the using an insulin pump include the fact that an insulin pump replaces the need for periodic injections by delivering rapid-acting insulin continuously throughout the day via a catheter and it greatly simplifies the management of diabetes.

There are two basic types of insulin pumps, one is used as an external device and the other is implanted internally. Both types currently pose hazards to patients referred to MRI procedures. For an external insulin pump, it may simply need to be removed and kept out of the MRI environment to ensure that there is no adverse impact on the functionality of this device.

The information below provides MRI labeling for several of the most commonly used insulin pumps: Insulin Pumps (Animas Corporation, a Johnson and Johnson Company)

This MRI information pertains to the following insulin pumps from Animas Corporation, a Johnson and Johnson Company:

- Animas 2020 Insulin Pump
- IR Animas 1200
- IR 1000 Insulin Pump
- IR 1100 Insulin Pump
- IR 1200 Insulin Pump

Each insulin pump indicated above should not be exposed to very strong electromagnetic fields, such as MRIs, RF welders or magnets used to pick up automobiles.

Very strong magnetic fields, such as that associated with MRI, can "magnetize" the portion of the insulin pump's motor that regulates insulin delivery and, thus, damage this device.

For the patient: If you plan to undergo an MRI, remove the insulin pump beforehand and keep it outside of the MR system room during the procedure.

If the pump is accidentally allowed into the MR system room, disconnect the pump immediately and contact Animas Pump Support for important instructions.

For the Healthcare Professional: Do not bring the insulin pump into the MR system at any time. If the pump is accidentally allowed into the MR system room, disconnect the pump immediately and contact Animas Pump Support for important instructions.

Cozmo Pump, Infusion Pump

According to the User Manual for the Cozmo Pump (Deltec, Inc., St.

Paul, MN), which is a device used to administer insulin, the following is stated regarding Magnetic Resonance Imaging (MRI):
"Caution: Avoid strong electromagnetic fields, like those present with Magnetic Resonance Imaging (MRI) and direct x-ray, as they can affect how the pump works. If you cannot avoid them, you must take the pump off."

Medtronic MiniMed 2007 Implantable Insulin Pump System

The Medtronic MiniMed 2007 Implantable Insulin Pump System (Medtronic Minimed, Northridge, CA) may offer treatment advantages for diabetes patients who have difficulty maintaining consistent glycemic control. Patients that have not responded well to intensive insulin therapy, including multiple daily insulin injections or continuous subcutaneous insulin infusion using an external pump, may be primary candidates for the Medtronic MiniMed 2007 System. The Medtronic MiniMed 2007 System delivers insulin into the peritoneal cavity in short, frequent bursts or "pulses", similar to how pancreatic beta cells secrete insulin.

The Medtronic MiniMed 2007 Implantable Insulin Pump is designed to withstand common electrostatic and electromagnetic interference but must be removed prior to undergoing an

Continued on next page ➡

MR procedure. Any magnetic field exceeding 600 gauss will interfere with the proper functioning of the pump for as long as the pump remains in that field. Fields much higher than that, such as those emitted by an MR system, may cause irreparable damage to the pump.

By comparison, infusion sets (MMT-11X, MMT-31X, MMT-32X, MMT-37X, MMT-39X) used with this device contain no metallic components and are safe to be used and can remain attached to the patient during an MR procedure. The only exceptions would be Polyfin infusion sets. Polyfin infusion sets (MMT-106 AND MMT-107, MMT-16X, MMT-30X, MMT-36X) have a surgical steel needle that remains in the subcutaneous tissue. These infusion sets should be removed prior to any MR procedure.

MiniMed Paradigm REAL-Time Insulin Pump and Continuous Glucose Monitoring System (522 and 722 Insulin

Pumps; Medtronic Minimed, Northridge, CA)

MRI Information for Patients Magnetic fields

Do not use pump cases that have a magnetic clasp.

Do not expose your insulin pump to MRI equipment or other devices that generate very strong magnetic fields.

The magnetic fields in the immediate vicinity of these devices can damage the part of the pump's motor that regulates insulin delivery, possibly resulting in over-delivery and severe hypoglycemia.


Your pump must be removed and kept outside the room during magnetic resonance imaging (MRI) procedures.

If your pump is inadvertently exposed to a strong magnetic field, discontinue use and contact your local help line or representative for further assistance.

The insulin pump, transmitter, and sensor must be removed prior to entering the MRI environment.

DANA Diabecare IIS Insulin Pump and DANA Diabecare Insulin Infusion Pump (SOOIL Development Co., Ltd. San Diego, CA)

The pump must not be used in the presence of intense electromagnetic fields, such as those generated by certain electrically powered medical devices. The pump should be removed prior to the user having a CT Scan, MRI or X-ray.

[MRI healthcare professionals are advised to contact the respective manufacturer in order to obtain the latest safety information to ensure patient safety relative to the use of an MR procedure.] 

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2011 UPCOMING Calendar of Events

Please visit <http://ismrm.org/smrt> for current calendar and activities

19
February

Rocky Mountain Chapter Regional Educational Seminar
Exempla Good Samaritan Medical Center, Main Conference Center
Lafayette, Colorado, USA

20–23
February

ISMRRM Scientific Workshop: Ultra-High Field Systems & Applications: 7T & Beyond: Progress, Pitfalls & Potential
The Fairmont Chateau Lake Louise, Alberta, Canada

12
March

South Carolina Chapter Regional Educational Seminar
Lexington Regional Medical Center, Main Auditorium
West Columbia, South Carolina, USA

7–8
May

SMRT 20th Annual Meeting
Palais des congrès de Montréal
Montréal Québec, Canada

7–13
May

ISMRRM 19th Annual Meeting & Exhibition
Palais des congrès de Montréal
Montréal Québec, Canada

SMRT



<http://www.ismrm.org/smrt>

SMRT – A Global Community



The Section for Magnetic Resonance Technologists (SMRT) of the International Society for Magnetic Resonance in Medicine (ISMRRM) is the leading non-profit organization that provides an international forum for education, information and research in magnetic resonance for technologists and radiographers throughout the world.

The SMRT was established by technologists, clinicians and scientists of the ISMRRM as a forum for technologists to share their expertise and educational resources, with a common goal of improving healthcare for people worldwide.

As an organization, we are committed to promoting communication and the dissemination of cutting-edge MR developments. The objective of the SMRT is to advance education and training, while striving to promote a high level of knowledge and professionalism among MR technology and radiography.