# SMRT Educational Seminars Home Study Program

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

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We are pleased to present the SMRT Educational Seminars, Volume 14, Number 2: "Pediatric Magnetic Resonance Imaging." This is the 52nd accredited home study developed by the SMRT, exclusively for the SMRT members. The accreditation is conducted by the SMRT that acts as a RCEEM (Recognized Continuing Education Evaluation Mechanism) for the ARRT. Category A credits are assigned to each educational symposia, which can be used to maintain one's ARRT and AIR (Australia, New Zealand and Tasmania) registries. For this issue, we have selected three articles that outline MR imaging techniques in the pediatric patient population. The first article discusses the fundamental building blocks of imaging the pediatric liver as well as advanced techniques. The second article is a very comprehensive review of pediatric MR urography. The third and last article describes the importance and techniques to quantify adipose tissue in children. We hope that this issue will provide a valuable update in the imaging of the pediatric patient, certainly one of our more rewarding and challenging areas in MRI.

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As stated by the author of our first article, "Imaging evaluation of the liver and biliary system is evolving rapidly. At our institution, MRI has replaced CT and ERCP in almost all situations as the preferred modality." Whether or not you are currently imaging pediatric patients on a regular basis, we believe this article will give you some insight into possible solutions for challenges in abdominal MR imaging as well as advanced techniques that you will be using in the near future if not already. Dr. Vasanawala is well known and highly regarded by MR imaging technologists and radiographers for his knowledge in MR physics and principles and his ability to understand and address the daily challenges that they face.

According to the authors of our second article, "Magnetic resonance urography (MRU) represents the next step in the evolution of uroradiology in children because it fuses superb anatomic and functional imaging in a single test that does not use ionizing radiation. MRU has advantages over other modalities in that it generates tissue contrast from a variety of sources. In addition to spin echo T1 and T2 images, dynamic imaging is performed in conjunction with the injection of a gadolinium-based contrast agent (GBCA) in order to assess the concentrating and excretory functions of the kidney." This is a very comprehensive and detailed review that is sure to provide you with new techniques and applications as well as basic tips and helpful information.

Our third article is from Sweden and describes a technique to employ MR imaging and automated quantification of adipose tissue distribution in children. This may prove valuable indeed as this is a serious problem that affects us worldwide. "Many children establish overweight or obesity in early childhood and there is a real risk that these individuals will remain overweight and obese throughout life. Body mass index (BMI) correlates with overweight and obesity and is an indirect marker of metabolic risk in adults. However, BMI does not fully reflect body fat distribution and may be less powerful as a predictor of health risk. A large waist circumference is known to increase mortality independent of BMI." Thanks to techniques like 2-point and 3-point Dixon that clearly and accurately separate fat tissue from water, we are seeing a resurgence in the development of similar yet more advanced sequences. These are variations of the Dixon technique but implemented as rapid acquisitions that also provide in-phase and out-of-phase images.

Many thanks to *Michael Kean, R.T.* from Melbourne, Victoria, Australia, for acting as our Expert Reviewer for this home study issue and the accompanying quiz that provides the continuing education credits.

Thanks to *John Totman*, SMRT Publications Chair from Nottingham, UK, for directing and supporting the home studies program

Thanks also to Jennifer Olson, Associate Executive Director, Mary Keydash, Publications Director, and the staff in

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the Berkeley, California, USA office of the ISMRM/SMRT for their insight and long hours supporting these educational symposia.

We would especially like to thank *John Wilkie* and all of the people at Invivo Corporation (Philips Healthcare) who generously support our home studies program, the SMRT Educational Seminars. Their continuing investment advancing technologist and radiographer knowledge brings quality continuing education to the SMRT membership worldwide.

## SMRT ELECTRONIC-ONLY HOME STUDIES

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 credits awarded through the completion of a quiz that accompanies each home study. The accreditation is conducted by the SMRT acting as a RCEEM (Recognized Continuing Education Evaluation Mechanism) for the ARRT. Category A credits are assigned to each home study, which can be used to maintain one's ARRT advanced registry and are approved for AIR (Australian Institute of Radiography) continuing professional development (CPD) activities. SMRT members located in other countries who are interested in investigating the possibility of having our home studies, printed or electronic, approved for continuing education or professional development should contact Jennifer Olson, Associate Executive Director of the ISMRM/SMRT in Berkeley, California, USA at jennifer@ismrm.org for additional information.

The home study articles, selected by members of the SMRT publications committee, are obtained from peer-reviewed journals or written specifically for our 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 and scientists. The topics have included a variety of interests from basic physics and principles to clinical applications and anatomy and physiology atlases. 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. As a means to minimize costs and to focus on becoming more environmentally conscious, SMRT members will see an increase in electronic-only home studies and a reduction in the number of pages in our printed publication.

Exciting future plans include video home studies for SMRT members to be easily accessed at our website so please stay tuned.

| Vol. | No. | Electronic Home Studies Title | Category A CE Credits | Date |
|---|---|---|---|---|
| E-1 | 1 | Safety of Magnetic Resonance Imaging in Patients with Cardiovascular Devices | 1 | September 2008 |
| E-2009 | 1 | Use of Contrast Agents in MR Imaging of the Spine | 1 | January 2009 |
| E-2010 | 1 | Techniques in Spine MR Imaging | 1 | June 2010 |
| E-2010 | 2 | Susceptibility-Weighted MR Imaging (SWI) | 1 | November 2010 |