ECR 2009 Congress President offers a warm welcome

By Borut Marincek, Zurich/CH, ECR 2009 Congress President

As President of ECR 2009, it is my great pleasure and privilege to offer you a warm welcome to the Austria Center Vienna for our annual congress. This meeting marks another step forward for radiology, in Europe and worldwide, as we look forward to consolidating and building on the progress of the last year, over five days of exchange, education and entertainment.

ECR 2009’s slogan, ‘the summit of science’, truly represents the spirit of our meeting. Thousands of ESR members, industry representatives and other interested parties congregate here in Vienna each year to evaluate the peak of achievement in our specialty, to become reacquainted with the changing frontiers of radiology, to recognize those pioneers who have laid the paths for others to follow, and to make another push for the summit. It is a testament to the abundant wealth of excellence available in our discipline, and to the highly efficient organizational talents of the ESR office staff, that this radiological showpiece is once again sure to exceed our expectations.

Regular attendees of ECR will be well aware of its increasing number of features, from the ever-expanding technical exhibition to the vast variety of peripheral services offered by the EIR. However, education remains the core constituent, with an educational and scientific programme that will once again offer the largest selection of sessions of any ECR yet, presented by eminent speakers from across the globe. The timetable is scattered with a host of New Horizons Sessions, State of the Art Symposia, Special Focus Sessions and Professional Challenges Sessions, touching on almost every imaginable topic in the radiological arena. The increasingly popular Interactive Teaching Sessions have also been extended to include a total of seven new subjects, while Categorical Courses on cardiac imaging, breast imaging, and spiral imaging and intervention will also constitute major highlights. With a raft of Refresher Courses, Mini Courses and Hands-on Workshops to choose from as usual, to find a gap in one’s schedule.

But there is of course far more to ECR than education, and I hope you will also find time to examine the technological advances being demonstrated in the exhibition halls and make the most of this year’s various industry-hosted sessions such as the Satellite Symposia and Industry Hands-on Workshops. The Hospital Management Symposium will also undoubtedly be drawing a crowd, to examine the economic, organizational and managerial issues surrounding radiology, perhaps with a pronounced relevance this year, given the current economic climate in Europe.

The opportunities offered by ECR are many, but those opportunities are always multiplied many times over by our location in the splendid city of Vienna. The ECR social programme once again has lots to offer, and the city itself is brimming with possibilities, offering a huge array of sophisticated entertainment and culinary wonders. Only in a place as well-endowed with historical and cultural pedigree as Vienna can the scientific quality of ECR find its extra-curricular counterpart, and it is fitting that our society, which is driven by innovation, should hold its annual meeting in this renowned capital of creativity.

I sincerely hope that all of you will squeeze every bit of potential out of this congress and that you leave with the satisfying sense of pride that we should all share in the achievements of our discipline. On behalf of the Congress Committee of ECR 2009, I would like to extend a personal welcome to all of you.

Dual energy CT edges towards clinical acceptance

By Paula Gould

Slice wars have dominated advances in CT technology for many years. That situation is now changing, and the market appears ripe for innovation. As evidence of this, energy-dependent imaging, a topic that was first aired over two decades ago, is now back on the agenda.

The reasons why two energies can be better than one will be explained this afternoon. Speakers at the special focus session on dual energy CT will outline the rationale behind this strategy: the different ways of gathering multi-energy CT data, and the potential clinical benefits. But is this an idea for tomorrow or today? After all, attempts to move energy-dependent imaging into the mainstream 20 years ago were unsuccessful. A panel discussion at the end of the session will reveal the presenters’ views, based on their personal experiences.

“It is rather like a technological revival,” said Dr. Hatem Alkadhi, head of body CT at the Institute of Diagnostic Radiology, University Hospital Zurich, Switzerland. “The technique is so technically advanced now that it is feasible and practical to apply it to routine clinical radiology.”

The principle behind dual energy CT is relatively straightforward. Spectral information gathered from a ray of photons depends to a certain extent on the photon’s energy. No attempt is made to separate out these subtle energy-dependent differences in conventional CT studies. In comparison, dual energy CT techniques deliberately extract and compare data from photons in two distinct energy ranges...
Easy removal of iodinated contrast from images is the current practice, but that is all carried out without dual energy CT, there is some time required for the dataset manually and correct mistakes made by the software.

Software packages designed to subtract the bone material compositions but similar CT attenuation profiles. This information can then be used to distinguish between structures that have different relationships and the team approach.

Several advantages of dual energy CT is the ability to remove bone from datasets. This application is especially helpful for voxel imaging studies where radiologists and vascular surgeons prefer to look at 3D views. Bony structures can often obscure the vascular anatomy on these reconstructions, making it difficult to establish an accurate diagnosis or use the images for treatment planning.

Dual energy CT can provide high quality images for cardiovascular and musculoskeletal applications, as shown in these four images. (Provided by T. Johnson)

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Internationally renowned paediatric radiologist receives ESR Gold Medal

In recognition of her exceptional contributions and pioneering work in paediatric and orthopaedic radiology, as well as her long commitment to European radiology, Professor Helen M.L. Carty from Liverpool, UK, will receive the Gold Medal of the European Society of Radiology today at ECR 2009’s opening ceremony.

By Mélisande Rouger

Helen M.L. Carty was born in 1944 in Dunraven, Ireland. She obtained Bachelor of Medicine and Bachelor of Surgery degrees from University College Dublin in 1967. Her clinical studies were in the Mater Hospital. She received the Gold Medal in Surgery and Obstetrics and the Silver Medal in Medicine in her final medical examinations. She initially studied internal medicine, obtaining her membership of the Royal College of Physicians in Ireland and was subsequently elected a Fellow. Having obtained membership, she began training in radiology and completed her residency in radiology at St. Thomas Hospital in London.

In 1974 she obtained a scholarship from the Royal College of Radiologists and soon became Consultant Radiologist at the Royal Liverpool Children’s NHS Trust, but in 1976, becoming Director of Radiological Services there in 1977, a post she held for 27 years. She was appointed lecturer in radiology and orthopaedic radiology at Liverpool University, shortly after her appointment as a consultant. In 1969 she became Professor of Paediatric Radiology at Liverpool University and Alder Hey, a position she held until her retirement from clinical practice in 2004.

She had broad interests within paediatric radiology and introduced interventional procedures to the children’s hospital. She helped to pioneer a radiological alternative to open surgery for children suffering from aneurysmal bone cysts, a rare but painful condition which results in localized swelling. The technique uses a sclerosing injection, which is effective, aesthetically more acceptable, and has shortened hospital stays. During her career, she has worked with numerous health organisations in the UK. She was Adviser in Radiology to the Chief Medical Officer of Health between 1995 and 1998, Deputy Chairman of the Administration of Radioactive Substances Advisory Committee (ARSAC), and President of the Liverpool Medical Institution in 1993–94. She served on many committees of the Royal College of Radiologists, including being a member of Council and examiner; and served a four year term as Warden of the College. She has also served as External Examiner and Supervisor of M.D. and Ph.D. theses in Dublin, Pakistan, Malawi and Singapore.

She has been invited as a visiting professor or lecturer on many occasions in Asia, Australia, Europe, South America, South Africa and the USA. She has a special interest in non-accidental injuries and has lectured extensively on this theme.

Fully committed to sharing her knowledge with her peers, Prof. Carty has also greatly contributed to the development of European radiology. She was President of the European Congress of Radiology in 2004 and was ECR Chairman in 2005. She spoke at every conference since ECR changed its format in 1991, until her retirement.

She has published 155 articles in peer-reviewed journals, 12 invited articles and 16 book chapters, 12 invited articles and 16 book chapters. She has been editor-in-chief and author of chapters in 6 books, including Imaging Children, a 2 volume textbook on paediatric imaging. She has regularly reviewed for medical journals, including European Radiology, the British Journal of Radiology, Pediatric Radiology, Skeletal Radiology, Clinical Radiology, and Archives of Diseases in Childhood.

Her achievements and leadership qualities have been duly recognized by her peers, and she has obtained Honorary Membership of the Foundation for Paediatric Radiology of Hungary, the Polish Radiological Society and the Radiological Society of North America (RSNA). She has also received the President’s award from the Association of American Women Radiologists in 2005. She was elected Honorary Member of Council of the National Society for the Prevention of Cruelty to Children in recognition of services to Child Abuse. She has also been awarded honorary fellowships of The Royal College of Paediatrics and Child Health and the Faculty of Radiologists of the Royal College of Surgeons in Ireland, and a Fellow ad eundem of the Royal College of Physicians of London. She was made a Deputy Lieutenant of Merseyside in 2005, a civic honour.

She has been married to Austin, also a doctor, since 1967 and they have three children and six grandchildren. Since her retirement, Prof. Carty has remained extremely active, spending time with her family and enjoying many hobbies.

“ESR Gold Medal awarded to a visionary member of the radiological community”

In recognition of his outstanding achievements in the field of head and neck radiology and his significant contribution to the development of European radiology, Professor Antonio Chiesa from Vicenza, Italy, will be awarded the Gold Medal of the European Society of Radiology today at ECR 2009.

By Mélisande Rouger

Antonio Chiesa was born in Thiene, Italy, in 1937. He entered medical school at the University of Padua in 1952, and was later promoted to Assistant Professor. In 1969 he was appointed Associate Professor of Radiology, and from 1970 to 1982 he served as Assistant Chief of Radiology at the Veneto branch of Padua University. In 1982 he was transferred to the University of Brescia where he served as Chairman of the Department of Radiology and Director of the Postgraduate School of Radiology. Two years later, he obtained full professorship, and has been teaching diagnostic imaging at the School of Medicine and Odontology of the University of Brescia since then. He was Director of Radiology at Brescia University until November 2007, when he retired.

His main interest is head and neck radiology and he has dramatically improved the discipline both in his country and abroad, notably while being President of the European Society of Head and Neck Radiology from 1994 to 1996.

An exceptional researcher, Prof. Chiesa is credited with transforming Italian radiology into an efficiently functioning discipline, and he has served on the board of the Italian Society of Radiology, the Italian Health Council at the Ministry of Health, and the Committee for the International Symposium for the Planning of Radiological Departments. His dedication to the development of the speciality extended far beyond his country and he served as ECR President in 2005. Chairman of the ECR Executive Committee and Vice-President of the European Society of Radiology.

Prof. Chiesa’s leadership abilities and enthusiasm have been duly acknowledged by his peers, and he notably received Honorary Membership of the American Roentgen Ray Society in 2005. He is an active international speaker, and has presented in more than 22 countries, mostly on aspects of general and head and neck radiology. In addition to his clinical work and speaking engagements, Prof. Chiesa serves on the editorial boards of European Radiology, Journal of Digital Imaging, La Radiologia Medica, and other Italian and European journals. He has authored more than 150 publications on general and head and neck radiology, radiological planning, and computer applications. He is also the editor of the textbook Diagnostic Imaging: a clinical guide to the request for examinations, published in 1994 (in Italian).

Prof. Chiesa married Anna Paola in 1964. They have 3 daughters and 5 grandchildren.

“When I was appointed to the ECR Board several years ago, I was already aware of the ECR’s scientific value, as I had attended the European Congresses from the very beginning, in 1991. Nevertheless, I did not know how complex the organisational structure already was. The knowledge of ECR mechanisms, in a few years, permitted me to enter the selected list of incoming presidents, and my presidency of ECR 2005 was the end point of this discovery’. Today, as I am about to receive a Gold Medal, I must say that ECR events, scientific as well as technical and social, are the best in quality. I am proud to have contributed to ECR Meetings, particularly at the end of my career, and I wish my colleagues in Europe the same professional achievements that I have enjoyed.”

ECR TODAY 2009

Friday, March 6, 2009

HIGHLIGHTS

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“Reliability has top priority with me”.

Hitachi Real-time Tissue Elastography (HI-RTE)

HI-RTE is an emerging ultrasound modality for the assessment and real-time colour display of tissue elasticity. The value of this 2nd generation ultrasound modality has been proven in a variety of different clinical areas, including breast, urology, endoscopy and many more. For more information visit www.HI-RTE.com

HI-RTE – Supporting Diagnostic Confidence.

ECR 09 Vienna: Don’t miss our HI-RTE Lunch Symposium on Saturday, March 7, 2009 and visit us at booth 328 in Expo C

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www.hitachi-medical-systems.com
Molecular imaging specialist gives keynote lecture at Friday’s opening ceremony

In recognition of her exceptional accomplishments, especially in the field of cross-sectional anatomic and molecular imaging of genitourinary cancers, Professor Hedvig Hricak from New York, NY/US, will present the Opening Lecture ‘Imaging in Oncology: Endless Horizons’ today at ECR 2009.

Hedvig Hricak is Chairman of the Department of Radiology at Memorial Sloan-Kettering Cancer Center (MSKCC). She holds a senior position within the Program of Molecular and Pharmacology Therapeutics at the Sloan-Kettering Institute and is Professor of Radiology at the Weill Medical College of Cornell University.

Dr. Hricak earned her M.D. degree from the University of Zagreb and her Ph.D. (Dr. Med. Sc.) from the Karolinska Institute in Stockholm. She holds an honorary doctorate from the Ludwig Maximilian University of Munich, Germany. Before coming to MSKCC, she was a professor of radiology, radiation oncology, urology and gynecology at the University of California at San Francisco (UCSF) and was the chief of the abdominal section of the Department of Radiology at UCSF Medical Center.

Dr. Hricak’s career in research, education and patient care has always focused on oncology. The imaging applications she helped develop include the use of ultrasound, MRI and CT for gynecological cancer; and the use of MRI and MR spectroscopy for prostate cancer. Her research is interdisciplinary and aims to discover minimally invasive imaging applications she helped develop include cancer detection, staging, treatment planning, and follow-up. Dr. Hricak has been the principal investigator or co-investigator of 24 intramural foundation and industry grants, 13 National Institutes of Health (NIH)/American Cancer Society grants, and 5 Department of Defense grants. She has been a dedicated promoter of international scientific collaboration and training for many years, and she currently directs an NIH-funded international training programme in molecular imaging. In addition, through the awards from the NCI and private foundations, she has established breast imaging and ultrasound training programmes for the countries of South East Europe.

Dr. Hricak has edited or co-edited 17 books and has authored or co-authored 322 peer-reviewed research papers, 141 review/editorial papers, and more than 127 book chapters. She is an associate editor and editorial board member of multiple premier medical journals. She has given 30 named or keynote lectures and has been a visiting professor at more than 30 institutions worldwide.

In addition to carrying on her research as well as administrative and educational work, Dr. Hricak continues to be engaged in clinical practice. In the last seven years, she has repeatedly been included in New York Magazine’s list of the city’s best doctors and in the Castle Connolly publication America’s Top Doctors.

Dr. Hricak is a fellow of the American College of Radiology, the International Society for Magnetic Resonance in Medicine, and the Society of Uroradiology. She served as President of the Society for Advancement of Women’s Imaging (1997–1999). She has also served as President of the California Academy of Medicine (1999), President of the Society of Uroradiology (2000–2003), and President of the New York Roentgen Society (2004–2005).

She was a member of the Board of the International Society of Magnetic Resonance in Medicine and now serves on the Executive Boards of the Academy of Radiology Research and the New York Roentgen Society. She is Chairman of the Board of Directors of the Radiological Society of North America (RSNA) and is slated to become President of the RSNA in 2010. She is a member of the Institute of Medicine of the National Academies and serves on the National Academies’ Nuclear and Radiation Studies Board.

In recognition of her career accomplishments, Dr. Hricak has received numerous awards, including the Marie Curie Award from the Society of Women in Radiology, the gold medal of the Internationale Society for Magnetic Resonance in Medicine, the gold medal of the Association of University Radiologists, the Brelcre Medal of the International Society of Radiology and the Morocco Medal of Merit. She has been awarded seven honorary memberships and three fellowships by national and international radiological societies from around the world.

Dr. Hricak is married to Dr. Alexander R. Margulis, a prominent figure in the field of radiology. She has one son, Peter Hricak, who lives in California. For the past nine years, he has worked for George Lucas as a computer expert, contributing to the creation of the Star Wars films and managing the worldwide computer infrastructure needed for the films’ production.

By Mélisande Rouger

ECR 2009 Party

Some like it hot!

at the Konzerthaus

on Monday, March 9, 19:30

The roaring 40’s and 50’s of the 20th century were amazing! An era of swinging music and wild dancing, when great artists and true entertainers were discovered and radio, TV and LPs helped them spread rousing new sounds across every continent.

After the enormous success of the 2008 ECR Party, which was inspired by the 30’s, this year’s party will be swinging once more. Believe it or not, the ESR has moved heaven and earth to revive the one and only Frank Sinatra, his unforgettable friend Dean Martin and the unrivalled Marilyn Monroe for your entertainment, before the DJ will take to the turntables to keep you dancing until dawn.

As usual, an excellent caterer will spoil you with a delicious buffet and lovely waiters and waitresses will provide you with as many drinks as you desire. All this is included in the ticket price of only € 65!

Let the ESR take you on a boogie ride to re-live the swinging 50’s! Be a part of it!

Get your ticket at the Travel Service booth located in the entrance hall, or buy it online at myESR.org.
Imaging innovations: Discover new ways to predict and diagnose disease earlier

Join us on Saturday March 7th, 2009 at the Austria Center for our satellite symposia.

Removing boundaries in MR: exploring new territories in clinical practice

12:30 - 13:30 • Room F2

Initial experience with Discovery™ MR750 3.0T
Focus on new body imaging results
Dr. Elizabeth Dick, London, United Kingdom

Non Contrast Enhanced MR Angiography with Inhance
Dr. Thorsten Bley, Madison, Wisconsin, United States

Patient care in oncology drives imaging innovations

14:00 - 15:30 • Room C

Chairman:
Prof. Andrea Laghi, Latina, Italy

High definition CT sets new standards in low dose and image quality
Dr. Vincent Barrau, Saint Denis, France

Innovations in PET/CT answer unmet clinical challenges in oncology
PD Dr. med. Thomas F. Hany, Zürich, Switzerland

Spectral imaging in CT oncology: characterisation and image enhancement
Alvin C. Silva, M.D, Scottsdale, Phoenix, Arizona, United States

For more information, please visit us at ECR booth #202

GE imagination at work
From Diagnosis to Intervention

Joint project between the Cardiovascular and Interventional Radiological Society of Europe and the European Society of Radiology addresses some key points of diagnosis and referral to interventional radiology within the radiology department.

By Nadja Alomar, CIRSE Office

Two of the most influential radiology societies in Europe join forces to bring you ‘From Diagnosis to Intervention’, an opportunity for diagnostic radiologists to update themselves on some of the treatments and procedures that interventional radiology currently offers to have on offer.

The rapid progress of interventional radiology has enabled its minimally-invasive treatments to replace many surgical procedures. This refresher indicates the most prevalent criteria which should alert the diagnostic radiologist to involve their colleagues from the interventional radiology department in treatment discussions.

Studies have shown that many more patients could benefit from interventional radiology thanks to the less-invasive nature of the procedures, which offer shorter hospital stays, decreased risk, pain and recovery times, as well as a reduced requirement of general anaesthesia.

‘From Diagnosis to Intervention’ is a step on the road to developing more knowledge and better communication and we hope very much that this collaboration between ESR and CIRSE will produce an impact on all our colleagues in the radiology department.

The exhibition will be open throughout ECR 2009 with catering facilities nearby, so whether you simply drop by for a few minutes between sessions or peruse at your leisure, you will most certainly benefit from this one-stop shop of the most prevalent issues in diagnostic and interventional radiology.

CIRSE, the Cardiovascular and Interventional Radiological Society of Europe wishes to thank the colleagues from the interventional radiology department.

From Diagnosis to Intervention is the latest campaign in a series of CIRSE activities aimed at raising awareness of the array of interventional radiology treatments and techniques.
We cordially invite you to join us at the GEST Europe Meeting 2009 devoted specifically to Embolization. For 2009 the GEST organisers and the CIRSE Foundation have joined forces and one event dedicated exclusively to Embolization will take place from April 15 to 18, 2009 in Paris, France.

The Scientific Programme once again promises a vast array of Embolization topics ranging from established to state-of-the-art techniques.

We are very much looking forward to meeting you in Paris in spring.
**New training course serves to focus ECR delegates’ attention on urinary tract**

By Frances Rylands-Monk

CT urography (CTU) with multislice technology has a very high spatial resolution for imaging the urinary tract. Highly sensitive, CTU techniques can detect tiny urethral tumours inside the intrarenal collecting system and ureter, which might avoid the need for more invasive endourologic procedures.

“CTU may be better than conventional x-ray urography and ultrasound because it is one-step shop to image the collecting system, ureter, and organs of the abdomen all in one scan,” said Prof. Dr. Claus Nolte-Ernsting, head of diagnostic and interventional radiology at the Evangelic Hospital of Mulheim, Germany. “It is fast, sensitive, and cost-effective. For at-risk patients, such as those who suffer from painless haematuria and those who are older than 40, CTU is a highly accurate diagnostic test for finding small urethral tumours.”

To optimise CTU while limiting radiation exposure, radiologists should seek to individualise the examination procedure for patients, according to Nolte-Ernsting, who will be speaking at this morning’s European Excellence in Education session about urography examination techniques. The session marks the start of an important course on imaging of the urinary tract that concludes on Saturday lunchtime.

Adequate timing of contrast injection is needed to perform the scan in the urographic phase, and to find this phase, Nolte-Ernsting will outline several strategies that can ultimately reduce the number of scans needed. In addition, combining the injection with a low dose of diuretics optimises specificity to obtain a complete enhancement of the urinary tract in one scan.

“These techniques are still relatively new. Radiologists know how to apply CT to the liver and in angiography, but not the urinary tract,” he said. “In some countries conventional urography is still popular. Radiologists may not know the benefits of combining it with CT in a single procedure.”

CTU has been in clinical practice since 2000 in some urology departments. Now, however, Nolte-Ernsting sees the need to distribute technique and expertise to general radiology departments. In Germany, most conventional urography examinations are performed by urologists, while in adult patients with haematuria, it can be used to detect urethral tumours. However, it is not widely used because longer acquisition times make it sensitive to motion. Motion artefacts due to respiration or ureteral peristalsis can affect image quality. To reduce these, faster sequences with breath holding are critical for the detection of small lesions that would otherwise be obscured by even slight respiratory motion.

These sequences can be obtained with new hardware and new developments aimed at increasing spatial and temporal resolution, such as the use of multichannel phased array coils that facilitate faster examination times and better image quality when used with parallel imaging. Also, the use of 3T equipment, providing higher signal-to-noise ratio, may increase image resolution, despite the greater likelihood of susceptibility artefacts and image heterogeneity due to high field strength.

“MR is still an evolving technique that is relevant on developments in hardware and sequences,” Cova said. “But good equipment allows doctors the all-in-one approach when imaging the urinary tract with MR. Diffusion imaging of the kidney may help in the evaluation of disease processes through anatomical and functional data acquisition during a single examination.”

This all-in-one approach is based on two MR urography techniques that are often combined. The older consists of the heavily T2-weighted turbo spine echo sequences (T2-weighted static fluid MR urography). The second, more recently developed method comprises T1-weighted sequences with gadolinium (T1-weighted excretory MR urography).

“T2-weighted static fluid urography is good for evaluating the distended and obstructed collecting system, but when the collecting system is not dilated, this technique is not optimal. Excretory MR urography with contrast medium and diuretics is preferred to obtain functional information,” she commented. “The better the image quality, the more accurate is the lesion detection. We still don’t know the sensitivity of excretory MR urography in the detection of small lesions, such as urethral tumours in the collecting system.”

CTU program of a male patient who had undergone radical cystoprostatectomy. The combined use of low-dose furosemide (5-10 mg intravenously) plus contrast material results in a complete and uniform specification of the entire urinary tract within 10-15 minutes post contrast. Minimum intensity projections reconstructed at different angles allow a 3D assessment of the unites anaesthetized in a correct, with excellent postoperative anatomic detail. The improved and functional hydration yields good distension of the ureters and the conduit while simultaneously, leakage of urine through the ureteral anastomosis is excluded. (Provided by C. Nolte-Ernsting)

MR urography’s lower spatial resolution means that visualisation of soft tissue calcifications such as urinary stones is not as good as CT, but it is preferred in children, patients with contraindications to contrast media and pregnant women, said co-speaker Prof. Maria Cova, chair of the radiology department at the Cattinara University Hospital, Trieste, Italy.

But this technique can save costs globally, noted Cova. "In some countries conventional urography is still popular. Radiologists may not know the benefits of combining it with CT in a single procedure."

MR urography is used mainly to detect congenital anomalies of the urinary tract in children and obstructive uropathy in pregnant women, while in adult patients with haematuria, it can be used to detect urethral tumours. However, it is not widely used because longer acquisition times make it sensitive to motion. Motion artefacts due to respiration or ureteral peristalsis can affect image quality. To reduce these, faster sequences with breath holding are critical for the detection of small lesions that would otherwise be obscured by even slight respiratory motion.

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Good QA practices and other safeguards can contribute to success with PACS

By Emily Hayes

Ubiquitous and now deemed indispensable, picture archiving and communications systems have become a part of everyday life in hospitals. But there is a dark side to those powerful systems, and radiologists should get educated and involved in technology management, experts say.

Though radiologists increasingly rely on PACS, they may be unaware of the accompanying risks, particularly the potential for mismanagement of patient data, said Prof. Davide Caramella, professor of radiology at the University of Pisa, Italy.

During Friday afternoon’s refresher course about PACS in evolution, he will explain how rigorous quality assurance (QA) practices can help prevent errors. Other speakers will address structured radiology reporting; integration of PACS images with electronic patient records and regional PACS implementation. Prof. Torkjörn Andersson, professor of radiology and deputy vice-chancellor at Örebro University in Örebro, Sweden, will serve as the session moderator.

Radiologists should view PACS as akin to a radiology department, rather than as a simple information system, and they must apply QA accordingly, Caramella said. Currently, however, QA practices for PACS vary widely across institutions. Large academic hospitals enforce strict monitoring of all PACS activities and implement proactive surveillance to avoid malfunctions, whereas smaller hospitals may not have the necessary in-house competencies for rigorous QA. Mismanagement of demographic data is one of the worst problems — the physician’s nightmare — as it can result in a mis-up and erroneous treatment of patients, he explained.

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“In some cases, hospitals entrust the vendors with too many responsibilities in managing PACS, according to Prof. Davide Caramella from Pisa, Italy.

“Radiologists should be the driving force, since they are the ones who have more to lose if there is not an [effective] QA programme,” he said.

In most cases, PACS are integrated with electronic patient record (EPR) systems, allowing professionals within an institution to simultaneously share and access a patient’s information and enabling telemedicine projects with external facilities.

“Of all the benefits increase tremendously with unified EPR and PACS for an entire region or country,” said Dr. Josep Fernandez-Bayo director of medical digital imaging at the UDDAT Diagnostic Centre in Sabadell, Spain.

To make this possible, a patient identification system must be implemented across a particular region. The regional approach offers a unified central backup system for patient information and associated images, plus economic advantages when it comes to hardware investments and maintenance costs.

Technically, the European and United States approaches to PACS are identical, but regional PACS may be more feasible in Europe due to the prevalence of more centralised public health systems. During the refresher course, Fernandez-Bayo will provide an overview of progress in regional PACS implementations in Europe, with case studies of integrated PACS/EPR systems in selected countries. He will also address challenges in deploying integrated systems. Nowadays, technology gives health providers enough tools to ensure secure exchange of data between different hospitals, and firewalls and secure encrypted networks help ward off intruders.

In Fernandez-Bayo’s view, the main threats to security come from within a hospital or regional system. To avoid security breaches, it is important to implement an information system with an airtight patient records access policy. Further- more, to avoid data manipulation, the radiology report should be encrypted with the private signature key of the imaging specialist.

“With this technique, we can ensure that no one can change the content of the report after the radiologist has electronically signed (off-line),” he stated.

Refresher Course: Computer Applications

Friday, March 6, 10:00-17:30, Room K
RC 405 PACS in evolution
Moderator:
T. Andersson; Örebro/SE
A. Structured reporting
P. Milikanberg; Mainz/DE
B. Process management and quality assurance in PACS
P. Mildenberger; Mainz/DE
C. Regional and national PACS and EPR
J. Fernandez-Bayo; Sabadell/ES

The Royal Belgian Radiological Society was founded in 1906 and is one of the oldest radiological societies in Europe.

It is a society of medical doctors and physicists that aims to promote the study and dissemination of scientific knowledge directly or indirectly related to radiology. The society’s main objectives are the promotion of basic and clinical research in the field of radiology; the collection, evaluation and dissemination of scientific knowledge; and the encouragement and support of continuous education.

The society has nine sections dedicated to the different subspecialties within radiology, each organising several scientific meetings per year.

In addition, a major annual symposium is organized by the president of the society. This year the Symposium of the President will take place on November 14th at the Aula of Ghent University, Voldersstraat 9, Ghent. The focus will be on gastrointestinal imaging, including state of the art lectures and refresher courses on radiation protection, computer-assisted diagnosis, and the surgical perspective.

Full membership is open to radiologists and radiologists-in-training who are corresponding members and who have performed and presented a scientific work with success. Associate membership is open to non-radiologists interested in the activities of the society. They have no voting rights.

Honorary membership is available to those appointed because of special merits to radiology and to the society.

Membership includes a subscription to the Belgian Journal of Radiology.

For more information on the RBRS visit www.rbbrs.org or mail katrin.incent@uliege.be
Evidence grows for high field MRI’s value in detecting and staging prostate cancer

By Karen Sandrick

Image-guided intensity modulated radiotherapy, high-intensity focused ultrasound, and cryo-therapy are increasing the curative treatment options for men with prostate cancer. The problem is how to determine which patients are most suitable for them.

The new treatments for prostate cancer require precise localisation of disease, but routinely used imaging techniques are not sensitive or specific enough for accurate staging. Greyscale transrectal ultrasound has a sensitivity of 30–50% and specificity of 77–90% for local staging and tumour localisation, and MRI at 1.5T has a joint sensitivity and specificity of 71–74% for conventional anatomical prostate imaging, according to recent research.

High-field MRI could be the answer. Attendees at an ECR 2009 special focus session on prostate cancer will learn about the advantages of 3T MRI for prostate cancer imaging.

"MR imaging is a powerful method for imaging the prostate gland because its high spatial resolution provides excellent soft tissue contrast, which may aid the detection and localisation of malignant lesions, the evaluation of disease stage based on the extraprostatic extension of cancer, and the detection of local or distant disease recurrence after treatment,” said Prof. Dr. Jurgen J. Fütterer, professor of radiology at Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands. He will describe what 3T MRI adds to prostate imaging.

The signal-to-noise ratio increases almost linear to the magnetic field strength, whereas the noise remains nearly unchanged with 3T MRI. Thus, the signal-to-noise ratio is approximately two times higher at 3T compared to 1.5T. The most significant benefit of this difference is the increase of spatial resolution, which improves the depiction of anatomical details and/or shortens acquisition time, thereby increasing patient throughput.

The chemical shift effect also increases linearly with the magnetic field strength. Spectral resolution at 3T is therefore enhanced compared to 1.5T. Signal intensity and frequency dispersion are higher, which may lead to better tumour characterisation.

In dynamic contrast-enhanced MRI, the increase in signal-to-noise ratio can be used to improve the temporal resolution of dynamic measurements, and increased temporal resolution may improve the accuracy of measurement of pharmacokinetic parameters.

Endorectal 3T T2-weighted and high spatial resolution dynamic contrast-enhanced MRI are able to identify morphological and vascular details, which may guide not only the detection and staging of disease but the direction of biopsies and treatment. Signal intensity changes obtained during dynamic imaging provide an estimate of the amount of contrast material that has accumulated in lesions. The passage of contrast into and out of lesions reflects the kinetic properties of tissue physiology, such as Ktrans and Ve values, and provides an indication of microvascular permeability and angiogenetic potential, according to Dr. B. Nicholas Bloch, instructor in radiology, Beth Israel Deaconess Medical Center, Boston, US. He will discuss MR perfusion and high-resolution imaging.

"The high field strength of 3T MRI is particularly useful in dynamic contrast-enhanced studies of the prostate gland." Dynamic contrast-enhanced MRI makes it possible to combine fast imaging – less than 3 seconds per image set – with good spatial resolution. This technique directly benefits from the increased signal-to-noise ratio at 3T, Fütterer said.

High-field MRI has its own drawbacks and challenges, including a quadrupling of radiofrequency power deposition compared with 1.5T, shorter T2- and longer T1-relaxation times, increased susceptibility differences, dielectric effect, and signal heterogeneity from larger B1 field variations. Using thinner slices and increasing the spatial resolution or bandwidth at higher field may partially circumvent some of these issues. However, these changes will offset some of the signal-to-noise ratio increase that comes with 3T imaging.

In addition, the loss in signal-to-noise ratio is less than linear with voxel size due to the decreasing line width (e.g., when resolution is increased from 0.075 to 0.094 cm), the signal-to-noise ratio decreases between 44% and 60%. Due to radiofrequency penetration effects, it can be difficult to achieve good RF field homogeneity. Par-allel imaging techniques, increased TR, reduced flip angle, and increased RF pulse duration can be used to overcome these problems, but at the expense of the signal-to-noise ratio.

Despite these difficulties, the increase in signal-to-noise ratio provided by 3T MRI is likely to expand the potential clinical applications for evaluating the prostate, Fütterer said.

"Endorectal 1.5T MRI is a common method of evaluating men with suspected prostate cancer. But in the next few years, 3T MRI will become the standard. A signal-to-noise ratio at 3T that is equal to the SNR at 1.5T with an endorectal coil is a big advantage," he noted.

Visit the European School of Radiology at the ESOR Lounge in the entrance hall.
MR imaging course reveals the fine line between ‘normal’ and damaged joints

By Paula Gould

MR imaging can be a double-edged sword when it comes to examining joints. Images acquired on today’s MR systems can display relationships between bone, fat, fluid and the various soft-tissue structures in exquisite detail. Signs of disease or injury have never been easier to detect. However, just seeing more may not necessarily make any difference to the treatment plan or eventual outcome.

Speakers at today’s new mini course on extremity joint MRI at will show how to manage this balancing act between improving diagnostic accuracy for therapeutic benefits and improving the orthopaedic specialists with fabulous, but entirely unnecessary, views. An early morning session will be devoted to the upper extremities (shoulder, elbow and wrist). A companion session in the late afternoon will cover the lower extremities (hip, knee, foot and ankle). Experts at both of the sessions will advise delegates how to distinguish unusual but entirely non-pathological – anatomical variants from signs of injury or disease.

The differentiation between non-standard joint anatomy and pathology can be far from easy, according to Dr. Klaus Wörtler, associate professor of radiology at the Technical University of Munich, Germany, who will be opening the course with a presentation on shoulder MRI. Diagnosing superior labrum anterior posterior (SLAP) tears, a common injury in athletes or tennis players, is a case in point. If the tendon attaches firmly to the bone, as shown in most anatomy books, then tendon damage may be disregarded when none exists.

“This variant, known as a sublbral recess, is very, very common. Even on arthroscopy, it is difficult to distinguish from a common SLAP tear. We have developed some criteria to differentiate between the two on MR images,” he said.

The common anatomical variants in the shoulder that simulate disease are found at the superior portion of the glenoid, the biceps insertion, and the upper anterior quadrant of the glenoid, Wörtler said. These variants and the pathology they mimic are most likely to be spotted if patients undergo MR arthrography. The sensitivity of conventional MRI to detecting SLAP lesions, for example, is about 50%. This rises to over 80% if MR arthrography is used.

Not all patients with shoulder pain will require MR arthrography, though. A 70-year-old patient presenting with a rotator cuff tear may not warrant imaging at all. An advanced MRI examination may similarly be a waste of time in a patient with a suspected biceps tendon lesion who is not a high-performance athlete. The added detail promised by MR arthrography might make little difference to the treatment plan.

“The very advanced techniques that provide this added anatomical detail are usually necessary in young patients, and in professional or semi-professional sportspersons and women,” Wörtler said. “You have to remember that sometimes the quality of the imaging will be better than the therapeutic options.”

Patients’ age is also relevant when contemplating MRI of the knee. The best candidates will be under 50 years old; said Prof. Bruno Vande Berg, chief of musculoskeletal imaging at Saint Luc University Hospital, University of Louvain, Brussels. For elder patients with knee problems, there is little point acquiring a detailed MR scan. The only surgical procedure that patients of this age are likely to benefit from is total joint replacement.

The value of MRI also depends on the nature of the suspected problem, he said. Knee ligament damage, for example, can be diagnosed accurately from a clinical examination. Additional imaging will make no difference to the diagnosis or recommended therapy. Patients with cartilage damage, on the other hand, may get a more detailed diagnosis from MRI. However, the surgical options available rarely merit this level of accuracy.

MRI is most important when meniscus damage is suspected. Surgery is the standard treatment for dealing with meniscal tears, but this diagnosis is difficult to make from a clinical examination alone. An MR scan will show whether surgical intervention is truly necessary.

Vande Berg plans to use his presentation to emphasise the importance of anatomical knowledge to joint MRI. He thinks radiologists who find themselves faced with a challenging diagnosis should make the most of the body’s symmetry.

“When imaging the knee, hip, ankles, feet and shoulder, remember that your patient will have two of these joints,” he said. “So if you have a problem, and you are hesitating between a diagnosis of a lesion and a normal anatomical variant, then take a quick look at the other side.”
Cardiac specialists offer tips and tricks to improve image quality for CT and MRI

By Frances Rylands-Monk

New CT technology has lowered radiation dose for low heart rate cardiac patients, without impairing image quality, and it promises to do the same for those patients with higher heart rates. For radiologists aiming to optimize image quality in cardiac angiography for as low as reasonably achievable radiation dose, today’s cardiac card test course is well worth attending.

Strategies to reduce radiation will differ depending on heart motion. If heart rates are high, beta blockers may assist in attaining a low-dose protocol, but patients with contraindications may need different strategies; radiologists may need to work in the synergetic phase for reconstruction.

“Two phases are associated with low motion; during systole and diastole. In high-end synergetic phase, heart rates exceed 80 beats a minute, low motion is no longer attainable in the diastolic phase, but radiologists may still obtain a robust scan with low motion in the end systolic phase,” said Dr. Jean-François Paul, cardiac radiologist and head of CT and MRI at Marie Lannelongue Hospital, Le Plessis Robinson, France.

In terms of technological developments, to reconstruct safely in the diastolic phase for patients with low regular heart rates, prospective sequential acquisition is preferable to conventional spiral acquisition with retrospective reconstruction. In this reconstruction, radiation is given continuously throughout all phases, and it takes place in the diastolic phase. This method is now associated with excess radiation dose, while prospective acquisition mode, which only radiates during the diastolic phase, is radiation dose preferred. He noted. Prospective sequential reconstruction mode has been available for heart scanning on most high-end CT machines in clinical practice for the past two years.

“Soon it will be possible for this prospective acquisition regime to be adequately applied in the synergetic phase using higher temporal resolution so that patients with faster heart rates can benefit. At the moment, though, most clinical CT protocols offer a temporal resolution of approximately 165-175 milliseconds for reconstruction, and this might be too low to get sharp images in high heart-rate patients,” Paul said.

To facilitate sharp images for any patient, radiologists are developing protocols with acquisition and reconstruction times of under 100 milliseconds, at least in the synergetic phase, because this temporal resolution increases the heart’s own cyclical motion, and radiologists must learn plenty of tricks to freeze heart motion to obtain clear images, he explained. One such technique is a basic knowledge of physiology—it’s being sought. To overtake imaging techniques to the cardiac cycle. The bases of ECG triggering and ECG-gating will be covered during the refresher course, along with the benefits and limitations. Retrospective ECG-gating, for example, offers more flexibility and may allow reduction of artefacts caused by arrhythmias.

MR offers some major advantages in cardiac imaging, but brings its own set of drawbacks. Of its many applications is the assessment of myocardial perfusion. Applied at rest and during pharmacologically induced stress conditions, this application can assess in detail the haemodynamic significance of a possible coronary artery stenosis. MR is also increasingly used for the differential diagnostics of various non-ischaemic cardiac pathologies, including cardiomyopathies, inflammations and infections.

“Coronary artery disease patients account for the vast majority of patients with cardiovascular diseases, and numbers are not decreasing. MRI allows for the differential diagnosis of a wide range of different pathologies,” said Dr. Bernd Wintersperger, associate professor of radiology, and section chief of general radiology and cardiac MRI imaging at Munich University Hospital, Germany. Artefact-free images are the basic necessity for an accurate diagnosis, as well as for a short examination time and fast patient throughput. Radiologists need to know about the sources of artefacts, and how to get rid of them by adjusting the field-of-view and imaging volume adequately.

If data acquisition is faster, then patients benefit from shorter examination times and hospitals gain from faster patient throughput.

“Time savings could be reinvested in even more sophisticated exams or in a larger patient volume,” Wintersperger noted. “Potentially the use of high-resolution spatial resolution may result in a more accurate diagnosis or further insight into pathologies, but this has not been proven at this moment.”

By making use of the baseline signal-to-noise ratio advantage over 1.3T, 3T MRI offers potentially faster acquisition times, but higher signal can also mean more artefacts, especially when using dedicated functional techniques such as CINE SSFP imaging, which is prone to banding artefacts. To overcome this challenge, a proper frequency adjustment is necessary to reduce off-resonance effects. “We can’t totally get rid of the artefacts, but we can shift them outside the heart through adequate and precise adjustment of the RF pulse,” Winter-

“Many doctors use parallel imaging once, and because of the risk of wrapping artefacts that might render the image quality unsuitable for diagnosis, they stop using it,” he said. “Doctors need to know how to identify wraping artefacts and how to get rid of them by adjusting the field-of-view and imaging volume adequately.”

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Other recent developments, such as cardiac optimised multi-element coil arrays, are designed to support and foster parallel imaging, which is a key application to reduce acquisition times. Many de-

CLINICAL CORNER

ECR TODAY 2009

Friday, March 6, 2009

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Trauma is the leading cause of death for people under 45 and the leading important imaging tool for trauma, since it enables injuries to be diagnosed very quickly and very accurately, explained Professor Robert A. Novelline from Harvard Medical School in Boston, US.

MDCT has also significantly improved during the last two decades. Twenty years ago, it took twenty minutes for radiologists to do a scan of the head; nowadays, it takes them only two minutes. This gain in time is the most important progress made in CT trauma imaging, Novelline stressed.

This increase in speed is due to improvements in scanning technology, said Novelline. At Massachusetts General Hospital (MGH), 100 to 110 CT examinations are carried out daily in the ED alone for both traumatic and non-traumatic emergency conditions. For further examination of spinal and musculoskeletal trauma, and complex brain injuries, MRI will be used.

The most common and serious injuries in major trauma are head, spine, abdomen and chest injuries. Thanks to systematic CT examination as soon as possible, trauma surgeons arrive in the ED, those injuries that used to be so difficult to see are now being made visible, helping to save a significant number of lives.

However, in many European centers CT is not systematically used for these patients when they arrive in the ED, either because of a lack of CT equipment or sometimes because of the lack of education of the medical staff, as Dr. Dominic Barron from Leeds Teaching Hospital, UK, will point out at the ECR. “At our hospital, we had fifteen patients last year who should have had CT prior to surgery. All of these would have had a different management plan if CT had been performed earlier in their treatment. These all had worrisome morbidity as a result, with several potentially avoidable deaths,” he said.

Barron, a musculoskeletal trauma radiologist, plans to stress the necessity of doing a polytrauma CT scan after an x-ray examination shows major pelvic injury, as it is often accompanied by unexpected bleeding in the chest, abdomen or spine, which is not visible on plain films. “Rather than doing a chest x-ray and sending the patient directly to surgery, shouldn’t we do a whole CT of the patient to exclude any other major injuries?” he asks.

Leeds Teaching Hospital, like many other hospitals in the UK and the rest of Europe, lacks CT equipment. It only has two CT scanners to deal with about 120,000 emergency cases per year as well as providing CT cover for all the in and out patients requests in a 1,300 bed hospital. By comparison, most hospitals in the USA would use at least five scanners for the ED alone in a hospital of this size.

In addition, the lack of education of medical staff prevents CT from being systematically used in major pelvic injuries. “A lot of trauma is managed by junior surgeons who only know the

By Milenands Reuger

Mini Course: Advances in CT and MRI in Major Trauma

Friday, March 6, 08:30–10:00, Room N/O
MC 119 Head and neck trauma
Moderator
K.A. Brigni, Athens/GR
A. Head
Ul. Linneenwaar, Munich/DE
B. Facial structures
M. Barker, Geneva/CH
C. Cervical spine
D.C. West, Houston, TX/US
Saturday, March 7, 08:30–10:00, Room N/O
MC 519 Body trauma
Moderator
T. Bowden, Chur/CH
A. Thorax
R.A. Novelline, Boston, MA/US
B. Intraperitoneal structures
M. Rieger, Innsbruck/AT
C. Extra-peritoneal structures
M. Scaglione, Castel Volturno/IT
Sunday, March 8, 08:30–10:00, Room N/O
MC 919 Musculoskeletal trauma
Moderator
K. Shanmuganathan, Baltimore, MD/US
A. Thoracolumbar spine
D. Weishaupt, Zurich/CH
B. Pelvis and hip
G. Barron, Leeds/UK
C. Extremities
M. Riegler, Innbruck/AT

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Review advances in CT and MR in major trauma

This gain in time is the most important progress made in CT trauma imaging, Novelline stressed. “Years ago, many trauma patients couldn’t get the benefit of CT; they couldn’t be in the CT for one to two hours because they were too unstable. Now we can scan the whole body in two minutes, which means we can scan almost every trauma patient,” he said.

In thoracic injuries, CT enables a faster and easier diagnosis of aortic injuries than an arteriogram, a procedure which would cost both time and money to the hospital. CT offers 3D visualisation of blood vessels with exquisite detail in the diagnosis of vascular injuries. It also depicts lung laceration and contusion, which are crucial injuries to diagnose in major trauma.

Thanks to its high precision, CT tends to be used as a detection tool for almost every trauma patient. At Massachusetts General Hospital (MGH), 100 to 110 CT examinations are carried out daily in the ED alone for both traumatic and non-traumatic emergency conditions. For further examination of spinal and musculoskeletal trauma, and complex brain injuries, MRI will be used.

The most common and serious injuries in major trauma are head, spine, abdomen and chest injuries. Thanks to systematic CT examination as soon as possible, trauma surgeons arrive in the ED, those injuries that used to be so difficult to see are now being made visible, helping to save a significant number of lives.

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In addition, the lack of education of medical staff prevents CT from being systematically used in major pelvic injuries. “A lot of trauma is managed by junior surgeons who only know the

Advanced Trauma Life Support (ATLS) standards, which are obsolete for any major trauma centre. Surgeons should be more knowledgeable about them,” explained Barron, who is also an ATLS instructor.

He also points out that emergency physicians don’t read the emergency literature but only the ATLS manual. Sometimes, it is also a lack of understanding from the ED that is to blame. “They wait too long before they send in a patient for CT, or they won’t send in an unstable patient, when they should,” he said.

At MGH, collaboration runs smoothly thanks to regular communication through monthly meetings, where radiologists and emergency physicians discuss changes and initiatives, explained Novelline, who is Director of Emergency Radiology at the MGH. “What might also help is the presence of a radiology section directly in the ED. Two radiologists are working there 24/7, and the section is equipped with two CT scanners, an MR scanner, an ultrasound room and three x-ray rooms. “The idea of placing radiology in the ED is much safer for the patient. But it is a new trend and most hospitals still don’t have it,” Novelline said.

Improving the cooperation between radiology and emergency medicine will be a priority at ECR 2009, with the initiative ‘ESR Meets Emergency Physicians’ on March 7.
Obesity epidemic puts extra emphasis on imaging of oesophageal cancer

By Emily Hayes

Widening waistlines have resulted in the higher incidence of many diseases, including the insidious acid reflux linked to oesophageal cancer. For upper GI radiologists, the disconcerting trend is cause for getting up to speed on imaging the oesophagus, typically with gold standard endoscopic ultrasound and CT techniques, although MRI looks set to play a bigger role in the future.

University of Amsterdam radiologist Dr. C. Yung Nio will start this morning’s refresher course with an overview of the epidemiology, causes and treatment for oesophageal cancer, the sixth leading cause of death worldwide.

In the past, oesophageal cancer was often of the squamous cell variety, triggered by overuse of alcohol and tobacco. In recent decades, though, squamous cell incidence has subsided, while types of cancer linked to gastro-oesophageal reflux disease – adenocarcinomas of the oesophagus and oesophago-gastric junction – have been on the rise in the United States, Europe and other developed countries.

From 1928 to 1976, adenocarcinomas accounted for about 0.8% to 3.7% of all oesophageal cancers, according to epidemiological experts in the literature. But adenocarcinomas of the oesophagus and oesophago-gastric junction dropped from 10% to 15% of the total from 1980 to 1990, and 40% to 80% in the period from 1990 to 2005. All types of oesophageal cancer are more common in men than women, due to greater use of alcohol and cigarettes, and also vulnerability to gastro-oesophageal reflux disease.

Typically, by the time symptoms appear, oesophageal cancer is advanced, and about half of patients present with tumours that cannot be operated on or have already metastasised.

“The rate in the Western world has increased significantly, much more so than for other cancers. So it is becoming more important for imaging to be able to appropriately stage these patients and assess which ones are likely to benefit from medical treatment, such as surgery,” said Dr. Angela Riddell, from the Royal Marsden Hospital, Sutton, UK.

CT is the workhorse modality for the initial assessment of oesophageal cancer, and it highlights disease spread and shows the relation of tumours to surrounding structures. Patients with non-resectable tumours are sent straight to chemotherapy and/or radiotherapy, while endoscopic ultrasound is indicated for those with localised disease.

With the aid of tiny probes, radiologists now trust endoscopic ultrasound to accurately visualise the individual layers of the wall of the oesophagus and guide biopsies of lymph nodes surrounding the tumours.

“Tumours can become quite large, causing stenosis. In the past, it was difficult for endoscopic ultrasound to pass through the tumour and give a full assessment. The smaller probes pass through and give details of the tumours,” Riddell said.

Today, MRI is used mainly to determine whether lesions in other parts of the body, typically the liver, are metastases of oesophageal cancer. The Royal Marsden is at the forefront of MR research in tumour staging, and the modality could play a more significant role in future. Riddell plans to share examples of her research during the refresher course.

Whereas endoscopic ultrasound requires insertion of a large tube under sedation and therefore presents some risks to the patient, MRI may be done using a special chest coil external to the body. Consequently, patients may prefer the comfort of the MRI examination, Riddell stated.

Meanwhile, PET/CT is already playing a valuable part in spotting clinically occult sites of disease spread and monitoring early chemotherapy treatment response, according to Dr. Vicky Goh, a third speaker at the refresher course. Research suggests that by improving staging, PET/CT helps prevent unnecessary surgery in up to 20% of cases, noted Goh, consultant radiologist at the Paul Strickland Cancer Centre at Mount Vernon Hospital in Middlesex, UK.

“PET/CT acts as a marker not only of response but also eventual outcome, and increasingly it is being used in assessment of disease relapse,” she said.

One pitfall is that some adenocarcinomas do not show FDG avidity and, consequently, sensitivity for disease detection decreases.

Given the trend towards patient-centred care, cancer treatment is moving towards a more individualised tumour-based approach, and PET/CT imaging of a tumour’s biological phenotype will become more relevant in clinical practice at staging and for therapeutic assessment, Goh predicted.

“Studies have already begun to investigate the flow-metabolic relationship and changes in flow-metabolic relationship with treatment in a variety of cancers with FDG-PET combined with a dynamic CT sequence, which can provide information on tumour perfusion,” she said. “I believe PET/CT will also become established in radiotherapy planning.”

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Emboloscopic ultrasound image demonstrates individual layers of the normal oesophageal wall. Arrows show inner mucosa, the hyperechoic submucosa, and the outer muscularis propria. (Provided by A. Riddell)

T2-weighted MRI image demonstrates intermediate-signal tumour (black arrow) involving the submucosa and muscularis propria of the right side of the oesophageal wall. (Provided by A. Riddell)

PET emission studies in two different patients show demonstration of metastatic disease within the liver, in addition to the primary tumour and nodal involvement (on the right). (Provided by V. Goh)
ESGAR promotes new standards in gastrointestinal imaging

By Simon Jackson, Plymouth/UK, ESGAR Secretary General

“Nothing endures but change” remarked Hera- clitus (544–488BC). Certainly this quotation remains truer today for the subspecialty of gas- trointestinal and abdominal radiology, which like all areas of diagnostic and interventional radiology has seen relentless technological inno- vation herald new developments and raise new imaging-related challenges.

From a diagnostic perspective, one of the major topical issues for ESGAR relates to the place of CT colonography (CTC) in the management of patients with suspected gastrointestinal pathol- ogy. The technique is now widely available throughout Europe and is currently used for the detection of occult colonic pathology in many symptomatic patients.

The role of CTC, however, as a screening exami- nation for colorectal cancer in asymptomatic patients continues to be hotly debated between various gastroenterological related disciplines, par- ticularly in the USA. In 2008 witnessed the pub- lication of new guidelines for colorectal cancer screening. These guidelines recommend routine CTC examination for the identification of intermedi- ate and large sized polyps.

The publication of the new colorectal cancer screening guidelines has already resulted in the agreement from at least one US provider for offi- cial CTC reimbursement, and I am sure that 2009 will see more developments in this area. The future role of CTC in colorectal cancer screening programmes does however raise the important issue of both scanner and radiologist reporting capacity. In particular, the central place of CTC in patient care has been closely watched by other medical specialties, with some gastroenterologists suggesting that the colonic human aspect of the report can perhaps safely be performed by non-radiologists.

In response to this concerning issue, ESGAR is currently developing revised consensus stand- ards for the performance and interpretation of CTC examinations, to be published during 2009, as well as offering a series of very successful high quality CTC training workshops for radiologists.

In addition, new developments such as comp- uter-aided detection (CAD) in CTC form an important focus for continued scientific activity by research groups.

Another important development that affects our subspecialty involves the increasing evidence base for the central place of imaging in the multi-disci- plinary team management of patients. ESGAR as a society continues to promote the integration of radiology in this area through various educational and training initiatives, including our annual meeting, which this year celebrates its 20th anni- versary (ESGAR 2009, Valencia/ES, June 23–26).

In addition, ESGAR proactively encourages com- munication and teamwork with other subspe- cialty GI-related groups. This has included the development of links with colleagues in gastro- entero logical-related societies, together compris- ing the European Association of Gastroenterology Fed- eration (EUGF). The comprehensive organisation represents the interests of over 22,000 European GI specialists and promotes similar goals to those of ESGAR. Currently our society is well-repre- sented both on the EUGF Scientific and Educa-
tion Committees thus promoting opportunities to help shape the future of European gastrointestinal services and patient-related care.

2009 remains an exciting time for gastrointes- tinal and abdominal imaging and ESGAR con- tinues to promote focus and leadership in the ongoing search for solutions to the challenges within our subspecialty.

European Society of Urogenital Radiology

establishes itself as a professional forum

By Bernd Hamm, Berlin/DE, ESUR President

The European Society of Urogenital Radiology (ESUR), since its foundation in 1990, has estab- lished itself as the main professional body in Europe for radiologists with a special interest in the field of urogenital imaging and contrast media research. The ESUR is dedicated to the develop- ment of this subspecialty and the expansion of educational and research activities in this field.

The annual scientific meetings of the ESUR offer the opportunity for exchange of professional knowledge and experience. They are held in a different country every year and are attended by radiologists and clinicians not only from Europe but worldwide. In addition to offering刷新er courses, special focus sessions and scientific ses- sions, each symposium has always focused on a specific topic. The ESUR meeting of 2009 will be held in Athens/GR (September 10–13) and will pay special attention to urogenital manifes- tations of systemic diseases. The 2010 meeting will be held in Brussels/BE (September 9–12) and will focus on urological aspects.

The ESUR has always given special attention to contrast media research and the safety aspects of these agents. Since its establishment in 1994, the Society’s Contrast Media Safety Commit- tee has published 20 important guidelines on the safe use of contrast media. These guidelines are implemented worldwide and translated into many languages, including Greek, Japanese and Russian. Some of these guidelines have been endorsed by the most cited papers of European Radi- ology. All the guidelines are freely available on the website of the Society www.esur.org.

The committee is currently dealing with the seri- ous condition of Nephrogenic Systemic Fibrosis (NSF), which may develop after the administra- tion of gadolinium-based contrast agents. Guide- lines have been published for the prevention of this complication which have recently been produced by the aca-
demic members of the committee and published on the ESUR pages of European Radiology.

The ESUR, with the help of its subcommittees, is establishing guidelines in the field of urogenital imaging and image-guided therapy. The Paedi- atric Working Group of the ESUR has recently published the guidelines Paediatric Urological Imaging Algorithms. Further guidelines are cur- rently under preparation on staging of endome-trial cancer, cervical cancer and ovarian cancer as well as the differential diagnosis of ovarian masses. Another Working Group pre- pares guidelines for MR imaging of the prostate.

Concerning current research in urogenital imaging, a recent survey of research performed by ESUR members, conducted by Professor Dercha, former President of ESUR, has shown that the most attention has been given to imag- ing of tumours of the kidney, prostate and female genital tract as well as CT/MR urography. Research projects have highlighted the impor-
tance of image-guided minimally invasive ther- apies including percutaneous ablation of renal cell carcinoma, focused high-intensity ultrasound therapy, and embolisation of uterine fibroids.

In addition, renal and prostatic imaging at molecu- lar and cellular levels is currently under investi- gation with exciting results.

The ESUR enjoys close cooperation with the Society of Urogenital Radiation (SUR) in the USA, with regular input from our American colleagues at the ESUR meetings and from our members at the SUR annual scientific meetings. Every four years a combined meeting between ESUR and SUR is organised and the venue alternates between the USA and Europe.

The society believes that strong clinico-radi- ologic cooperation is of vital importance in modern medical practice and has established strong scientific links with clinical societies such as the International Society of Nephrology and the European Association of Urologists. ESUR members are invited to speak on imaging top- ics at the meetings of these societies. Nephrolo- gists and urologists from these societies are also invited by the ESUR to bring clinical perspec- tives to the society’s annual symposiums. Shar- ing and exchanging points of view with clinical colleagues has become one of the highlights of the educational programme of the ESUR annual scientific meetings.

We are fortunate in the ESUR that our worldwide members enjoy good friendship, which has devel- oped over the years. Getting together every year at the annual meetings of the society has strength- ened the committee amongst our members.

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Head for the technical exhibition to learn about the latest advances in CT imaging

By John Bonnar

Speed and efficiency are two of the buzzwords used most commonly in the highly competitive field of CT imaging. When the wraps are lifted from the ECR 2009 technical exhibition at 14.00 this afternoon, you will be able to witness for yourself the dazzling improvements in the rate of data acquisition achieved by the current generation of CT scanners. Vendors claim that huge improvements can be expected, both in the workflow of the radiology department and the safety of patients.

Siemens is showcasing its Somatom Definition Flash, which the company insists will set new standards for speed and radiation dose reduction in CT. The scanner is a dual-source machine in which the gantry can rotate around its own axis in 0.28 seconds. This rapid rotational speed enables a scan speed of up to 63 cm per second with a temporal resolution of 75 milliseconds. The patient is moved through the CT tube more than twice as fast as with any conventional systems, according to Siemens.

All this is possible at a much lower radiation dose than with previous generations of CT scanners, which operate with an average effective dose for a heart CT examination that ranges from 8 mSv to 40 mSv. In contrast, the new Siemens machine exposes the patient to 1 mSv. To put that into perspective, for most people the average annual radiation dose from ‘natural’ sources will amount to between 2 and 5 mSv. Because the radiation dose for the new scanner lies below those resulting from an intracardiac catheter examination, it is possible for the CT to be used as the modality of choice for routine cardiac examinations. Indeed, a scan of the entire heart can be performed in 250 milliseconds, which is less than half the time required for a normal heart beat.

The machine also features a new application, X-CARE, intended to selectively reduce the radiation exposure of particularly dose-sensitive regions of the body, such as the female breast. This is achieved by switching off the x-ray tube assemblies during the rotation phase in which the anatomical regions concerned are most directly exposed to radiation. In this way, it is possible to reduce the radiation exposure of individual anatomical regions by up to 40%.

CT vendors are placing greater emphasis on patient comfort with their new product offerings. (Provided by Siemens)

"The Somatom Definition Flash is not only the world’s fastest CT scanner, but also the one with the lowest radiation exposure," said Bernd Wenting, CEO of Siemens’ imaging and IT division. "We have always given top priority to radiation dose reduction, and we are proud that our company has once again set a new standard in this regard."

GE Healthcare is equally confident about the clinical advantages of its latest product, the LightSpeed CT750HD. This was introduced at the end of last year after an eight-year development project that re-examined the whole of the data-acquisition chain. The outcome was the introduction of the vendor’s first new scintillator material for 20 years, called Gemstone. This new detector allows the scanner to deliver images 100 times faster than traditional equipment, with up to 33% greater detail throughout the body and up to 47% improvement in the detail achieved in cardiac examinations, according to GE. At the same time, it is reportedly capable of reducing radiation dose by up to 50% across the whole body and by as much as 83% for cardiac scans.

Better tissue characterisation is one of the clinical benefits of the LightSpeed CT750HD, according to GE. The machine was introduced at the end of 2008. (Provided by GE)

"This allows better characterisation of tissues, which is something that CT has not been very good at until now," explained François Roche, CT premium product manager at GE Healthcare. "It can see anatomical structures, it can define them, but previously it wasn’t able to characterise them. This clearly is very important in oncology and also in cardiac imaging, where the new technology will be able to distinguish between soft plaques and calcium deposits in the heart vessels."

The system can also improve diagnostic confidence by producing clearer images, he noted. It can produce a monochromatic image with substantially reduced beam-hardening artefacts normally attributed to bone, metal and iodine, and can provide the tissue contrast optimisation necessary for better lesion detection.

One of the centrepieces of the Philips booth will be its 320-slice Brilliance iCT scanner launched in late 2007, which continues to capture a significant share of the CT market, the company says. Again speed is a key feature of the product, and it can acquire the data to image the entire heart in just two beats, while potentially reducing the radiation dose for patients by up to 80%. The overall scan time is also much quicker than with earlier systems, as the gantry rotates four times in a single second or 22% faster than previous systems.

The Brilliance iCT scanner incorporates the Essence technology, which comprises a set of innovations throughout each step of the CT scan, including new x-ray tubes, detectors and reconstruction design elements. This technology can provide detailed and clear 3-D images of an entire organ, including the heart and brain, and radiologists can expect key clinical insights for a wide range of applications in radiology and cardiology, according to Philips.

Toshiba Medical Systems will also be presenting a premium CT scanner that aims to improve clinical practice. Its Aquilion ONE is the first CT unit capable of acquiring isotropic volumes of an organ with a single rotation of the gantry, the manufacturers state. This feature creates a number of new potential solutions, including the neons ONEW provides that allows the acquisition of multiple low-dose volume scans of the entire brain during contrast infusion to provide whole brain perfusion and whole brain dynamic vascular analysis in a single examination. Dynamic volumetric acquisition protocols can also be used to review moving joint structures in 3-D, providing new clinical applications for orthopaedic imaging.

CT vendors are placing greater emphasis on patient comfort with their new product offerings. (Provided by Siemens)

"This better characterisation of tissues, which is something that CT has not been very good at until now," explained François Roche, CT premium product manager at GE Healthcare. "It can see anatomical structures, it can define them, but previously it wasn’t able to characterise them. This clearly is very important in oncology and also in cardiac imaging, where the new technology will be able to distinguish between soft plaques and calcium deposits in the heart vessels."

CT vendors are placing greater emphasis on patient comfort with their new product offerings. (Provided by Siemens)

The Technical Exhibition will be open on Friday from 14.00 to 18.00. You can also visit the exhibits from 10.00 to 18.00 on Saturday, Sunday and Monday.

With its 16-cm-wide detector unit, Aquilion ONE provides sufficient coverage to allow the scanning of most bodily organs within one rotation, with clear advantages for the safety of the patient. By eliminating the need for helical scanning, this dramatically reduces the resulting radiation dose, and the attenuated scan times will also lead to decrease in the amount of contrast media used.

In this earlier CT scan using the Flash Spiral Cardio facility of the Somatom Definition system, only a 0.9 miliampere, dose was needed to show the fine details. (Provided by Siemens)
The Swiss National Research Network Co-Me puts a sharp focus on image-guided interventions

By Patrick Roth and Bernhard Reber, Zurich/CH, Swiss National Center of Competence in Research on Computer Aided and Image Guided Medical Interventions (NCCR Co-Me)

Improving medical image guidance and surgical navigation through information technology is the primary goal of the Swiss National Centre of Competence in Research Co-Me (NCCR Co-Me). New high-fidelity surgical tools for training, planning, and intra-operative support are developed through several different avenues of research.

Today, three-dimensional biomedical imaging is used not only for diagnosis but also for planning and conducting surgery, as well as treatment strategies. The concept is generally referred to as image-guided intervention. In the context of the Swiss National Centre of Competence in Research Co-Me (computer-aided and image-guided medical interventions), engineering, medical and biological research is conducted in order to improve intra-operative navigation leading to the further reduction of invasiveness, to advance simulation tools for pre-operative planning, and to combine image guidance with advanced surgical tools that enable entirely novel approaches in functional neurosurgery. The following project descriptions are a small selection of the research and development the NCCR is currently pursuing.

Augmented Reality and Endoscope Calibration

Endoscopic imaging systems are used in many complex procedures in the area of otolaryngology, to visualize the surgical field. During these procedures it is difficult to ascertain anatomical landmarks once the anatomy has been surgically altered or the operating area is filled with blood. The use of augmented reality (AR) can enhance the endoscopic view and enable surgeons to view hidden critical structures (e.g. arteries or nerves), pathologies (e.g. tumours), risk regions or the results of a previous trajectory. AR technology overlays critical regions or structures preoperatively in a CT/MR volume. These landmarks and structures are overlaid on to the video stream, which helps the surgeon to achieve proper anatomical orientation and monitor the proximity to the critical structures and hence avoid damage to them.

Soft Tissue Prediction for CMF osteotomies

To precisely predict the outcome of surgical interventions, a prediction of the movement of the soft tissues in the face (muscles and skin) is required. A generic muscle atlas is superimposed onto the individual patient's bone model. The displacement of muscle and skin structures can be modelled very effectively and the result is used for prediction in the planning of osteotomies. Prof. Hans-Florian Zeilhofer of the Division of Cranio-Maxillo-Facial Surgery, University Hospital of Zurich, is extending the use of MRgFUS technology to applications in the human brain by developing technologies and protocols for non-invasive treatment of different diseases through the intact skull.

Transcranial MR-guided Focused Ultrasound (tMRgFUS) promises to improve minimally invasive functional surgery techniques through higher precision multifocal possibilities and real-time thermal control. The new procedure could overcome limitations of traditional skull penetrating surgery, such as the risk of damaging surrounding healthy brain tissue, and the risk of hemorrhage and infection. The first clinical application for tMRgFUS will be the neurosurgical treatment of functional brain disorders, such as Parkinson's disease, dystonia and tremors, neurogenic pain and tinnitus, neuro-psychiatric disorders and epilepsy.

At the MRI-Center of the Children's Hospital of the University of Zurich an InSightec ExAblate 4000 system is interfaced to the 3.0T high field MR-scanner (shown left). The half-spherical ultrasound transducer and the positioning mechanics are in the center, a stereotactic frame for immobilising the patient head is mounted in front of the transducer (demonstrated by a test setup on the right).

Visit the IMAGINE Area on the 2nd level!
European Institute for Biomedical Imaging Research looks back at a successful 2008

By Gabriel Krestin, Rotterdam/NL,
ESR Representative for EIBIR General Meeting
ESR Research Committee Chairman; Jürgen Hennig, Freiburg/DE; EIBIR Scientific Director

Another successful year for the European Institute for Biomedical Imaging Research (EIBIR) has drawn to a close and we are pleased to announce that the Annual Scientific Report 2008 is now available and provides an update and review of this year’s activities and research projects, as well as detailed information on planned activities. The report can be downloaded at www.eibir.org.

During the past year, EIBIR’s membership has grown to close to 240 research institutes with a focus on biomedical imaging or related disciplines. This number shows that networking activities in our specialty are crucial and that EIBIR is on the right track towards establishing itself as a bridge between basic and clinical research, technological and pharmaceutical development.

Don’t miss out on EIBIR’s session at ECR 2009

Learn about EIBIR’s recent activities and results of the projects ENCITE and HAMAM, both coordinated by EIBIR. The session is open to all ECR 2009 delegates. Pre-registration is not required.

Our goals of creating multi and inter-disciplinary research environments, bringing together medical doctors, physicists, mathematicians, molecular biologists and computer scientists, achieving close co-operation between universities and research centres as well as increasing collaboration between imaging specialists and clinicians, are no doubt ambitious and require collaboration with pharmaceutical industry, system manufacturers, and information technology.

Of course many of our new initiatives would not have been possible without the continual support of the European Society of Radiology and our industry partners, who subscribe to the mission of EIBIR and have provided financial support right from the beginning. We very much regret that one of our long-standing supporters, Bayer Schering Pharma AG, has withdrawn as an Industrial less formal form of cooperation with such status, we are planning to introduce an additional, more formal form of cooperation with such organisations under the umbrella of ‘Friends of EIBIR’. This concept is currently being developed as a bridge between basic and clinical research, technological and pharmaceutical development.

During 2008 we were pleased to officially welcome two new organisations as co-shareholders of EIBIR – the European Association of Nuclear Medicine (EANM) and the European Federation of Organisations of Medical Physics (EPOMP) – and negotiations are also underway with the European Organisation for Research and Treatment of Cancer (EORTC) and the European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB).

Co-shareholders are represented at the general meetings of EIBIR, where major strategic decisions are taken and recommendations are developed for the other bodies and initiatives of EIBIR. As there are some European organisations that are eager to support and seek cooperation with EIBIR but are unable to commit to formal co-shareholdership, mainly due to their charity status, we are planning to add an additional, less formal form of cooperation with such organisations under the umbrella of ‘Friends of EIBIR’. This concept is currently being developed and will be launched in early 2009.

EIBIR’s four joint initiatives, all developed during 2007, have further expanded their activities. The Chemistry Platform has set up a consortium of Europe’s leading experts in developing smart agent probes to prepare a project proposal for the EU FP7 health call launched in early September.

The other project, HAMAM – Highly Accurate Breast Cancer Diagnosis through Integration of Biological Knowledge, Novel Imaging Modalities, and Modelling – has the potential to strengthen Europe’s leadership in the area of image-based breast cancer diagnosis. Together with two consortia of Europe’s top experts in the relevant fields, EIBIR submitted two new proposals within the EU FP7 programme HEALTH call in early December.

One project deals with the development of smart agents that provide maps of values of physicochemical parameters such as pH and pO2 or of specific enzymatic activities. The obtained maps will be fused with anatomical images to provide completely new information content that has until now not been accessible via imaging methods. The second project focuses on nuclear medicine and consists of a literature survey on dosimetry and health effects of diagnostic applications of radio-pharmaceuticals. You will find a detailed update on the projects in the Annual Scientific Report.

Last, but not least, and although still semi-official, is our pleasure to inform you about yet another ambitious project that is currently in the pipeline and that has received positive feedback by the panel of evaluators: EIBIR and the European Molecular Biology Laboratory (EMBL) have submitted a proposal to the European Strategy Forum on Research Infrastructures (ESFRI) on establishing a European biomedical imaging infrastructure – from molecule to patient. The project was presented at an ESFRI conference in Versailles in December 2008.

www.eibir.org
Do you know the right financing strategy for your hospital?

Dr. André Hoppen will speak at the Session of the symposium.

Since the beginning of the global economic crisis, the question of whether and how much hospital managers should invest in updating medical technology has become more complicated. Fear of making the wrong decisions and incomprehension about future budgets make it even more important to find trustworthy and competent financial solutions shaped to the specific needs of individual hospitals. VR Medico, the medical branch of VR-Leasing AG, offers such solutions.

André Hoppen: When it comes to financing, we distinguish between manufacturer-owned leasing, which means financing solutions available directly from the manufacturers whose products a hospital chooses; the independent leasing companies that mainly offer contracts with small business volumes; and bank-linked leasing as offered by VR-Leasing.

The particular feature of the VR-Leasing group is that, whilst it is a generalist company and offers the complete leasing spectrum, it works around specific business divisions, which means there are specific solutions for IT companies, for the automotive sector and the medical sector. VR Medico is a separate division within VR-Leasing. All our employees have many years of experience in areas such as medical technology, health economics, medicine and pharmaceuticals. With this staff structure we are well positioned and talk the same language as the customers. This is particularly important for advising large and individual customers, helping us to gain an understanding of their specific requirements and enabling us to offer customised financial solutions.

A further feature of VR-Medico is that our credit analysts are trained at the Academy of the German Hospital Association to ensure they can fully read and understand hospital balance sheets, because these differ largely from those in private industry and they have very different parameters. When a decision is made on financing there has to be a clear understanding of how a hospital draws up the balance sheet, which is a requirement for a leasing contract in most other countries. Additionally, the balance sheets in the various countries are very different. In Eastern European countries, for instance, hospitals draw up balance sheets in an analogue way, based on the IFRS standard or the US-GAAP standard, that is, based on international balance sheet guidelines, which is actually quite rare in Germany.

In Eastern European countries we also distinguish between financial leasing and operating leasing, which, again, is the exception in Germany.

What is the difference between the two kinds of leasing and which is suitable for what?

With financial leasing, the acquisition is fully amortised, which means there is no residual value. With operational leasing, the leasing company retains a residual value, the investment is not fully amortised and at the end of the lease term the leasing company has to dispose of the medical equipment on the free market in a way that ensures they don’t suffer any losses.

Within the EU, medical technology can only be sold (and sold-on) via so-called medical products, which, again, is the exception in Germany.

Today, the large hospital gets some relief with the length of hospital stays, while the regional hospital takes over aftercare and brings patients closer to their families – and the cooperation has positive effects for both hospitals in terms of DRG billing.

The conclusion: The large hospital gets some relief with the length of hospital stays, while the regional hospital takes over aftercare and brings patients closer to their families – and the cooperation has positive effects for both hospitals in terms of DRG billing.

New enablers for teleradiology: eMarketplaces

Dr. Hanna Pohjonen has been Associate Professor at the Tampere University of Technology since 2004. She has a Master of Science degree in Engineering and a Doctorate of Science in Technology, both from the Helsinki University of Technology. Besides other responsibilities she was project manager for the Health and Welfare sector at the National Technology Agency under the Ministry of Trade and Industry (TIE) and is the Finnish representative in the European Union Health Telematics working party.

André Hoppen will speak at the IT Session of the symposium.

The EU eHealth initiative and action plan is the driving force behind building national eHealth platforms to share patient information and network expertise. It was launched in 2004 and will be applied in its current form until 2010. This initiative encourages national level implementation of eHealth and integrated healthcare provision across the EU. eHealth platforms are being developed in several countries and financed partly by the EU.

The cross-border availability of imaging professionals can be ensured using two tools: eMarketplaces for imaging (e.g. eBuy) and a local workflow grid (internal marketplace). The eMarketplace strategy is based on a concept of combining healthcare delivery entities (public or private) that need to buy imaging-related services with private reporting companies or public healthcare delivery entities that have extra capacity to deliver these services.

The traditional point-to-point teleradiology connections may gradually be replaced by the marketplace.

The customer side, the new approach can offer the following added value:

• opens up the whole market with more choices
• makes it possible to compare prices and take the best price available
• provides access to slow-cost short or long-term storage
• pays as you go services are particularly good for smaller volume end users

The added value for the provider side could be summarised as follows:

• opens up the whole customer market
• makes it easier to integrate the customer and provider systems
• provides access to slow-cost short or long-term storage
• pays as you go services are particularly good for smaller volume end users

The conclusion: The large hospital gets some relief with the length of hospital stays, while the regional hospital takes over aftercare and brings patients closer to their families – and the cooperation has positive effects for both hospitals in terms of DRG billing.
Key success factors for hospital management: What makes a hospital successful?

Mag. Stefan Furtmüller has a master degree in international business administration (Vienna University of Economics and Business and HEC Montréal; degree with distinction). Since 2000 he has been a consultant with Contrast Management-Consulting, since 2002 senior consultant, from 2007 he has been Project Manager for advisory services in the areas of strategy, organisation and performance management with an industry focus on non-profit and public management.

He is a lecturer at the Vienna University of Economics and Business in the MBA programmes for healthcare and social management, and lecturer at the Austrian Controller Institute and other organisations.

His further professional experience is with Booz-Allen & Hamilton, BASF and the Austrian Federation of Industry.

Mag. Furtmüller will speak at the Management Session of the symposium.

In 2008 the Austrian Controller Institute and Contrast Management Consulting conducted a comprehensive survey on the management of Austrian hospital groups. All major health service providers participated.

Hospitals that participated in the survey:

Private hospitals run by religious societies, Barnherringer Brüeder (Österreichische Ordensprovinz), Elisabethinen Linz, Evangelisches Diakoniewerk Gallneukirchen, Kreunschwestern Sierning GmbH, Vinserne Gruppe Krankenhausbetreibungs- und Management GmbH

Public hospitals run by provinces:


The survey comprises strategic issues from the point of view of the top management as well as an analysis of the stage of development of tools and techniques in the fields of strategic management, management control, process and quality management. The general conditions for hospital management are not simple (too many stakeholders and interest groups, different finance systems, etc.). Newly developed business tools and methods can help here. Some hospital groups make good use of these approaches (at least in some areas) and for most organisations there is still quite a lot of room for further improvement.

Private hospital groups run by religious societies have already taken more steps to update their obsolete structures than public groups (run by provinces).

The contents of the survey contain relevant information for Austrian as well as international health professionals as they show possibilities for improvement that are true for many organisations in different countries.

Structural changes help transform Viennese hospital structure

Since 2005, Prof. Dr. Wilhelm Marhold has been the General Manager of the Wiener Krankenanstaltenverband (Vienna Hospital Association), one of the largest health institutions in Europe, uniting 12 hospitals and 11 centres for geriatric medicine. He studied medicine, media studies and political sciences. As specialist in gynaecology he became senior physician at the Rudolfinum Hospital in 1988 and was its Medical Director and Head from 1997–2005.

Dr. Marhold will speak at the Management Session of the symposium.

The aim of the Vienna hospital concept is to achieve regional balance of medical care in Vienna. The new North Hospital will be the core of this concept.

"The Vienna hospital reform project is concerned with enhancing efficiency and achieving a synergy of the existing facilities," says Dr. Wilhelm Marhold, the General Manager of KAV.

"New tasks and new identities for old hospital sites instead of the uncreative act of closing hospitals" is the motto. The Vienna Hospital Reform focuses on enhancing the efficiency of the entire landscape of Vienna hospitals.

The city of Vienna is enhancing efficiency in the health sector in order to be able to offer top level medicine to all residents of the city, irrespective of their origin, gender, income or age. This includes exact screening as to what type of service is being offered where, and how this may possibly be offered at a better price.

Setting new points of emphasis in the whole of Vienna

The Floridsdorf Hospital, the Semmelweis Women’s Clinic, and the Orthopaedic Hospital of Gershof, as they exist now, will be completely shifted to the new North Hospital. The departments of heart surgery, cardiology, and parts of neurology from Hietzing hospital will be moved there as well. Hietzing hospital will be transformed into a highly modern clinic for widespread diseases such as stroke, diabetes and rheumatism, and will continue to offer cardiac care as part of its internal medicine services.

Otto-Wagner-Spital will remain a specialised hospital for orthopaedics, psychiatry, neurology and pulmonology. Parts of the departments of pulmonology and chest surgery as well as psychiatry will be transferred to the North Hospital. The goal is to achieve further regionalisation and tend to psychiatric patients in specialised hospitals. A part of the paediatric department of Wilhelmstein hospital will also be shifted to the North Hospital.

Additional beds will be provided at the new location for paediatric and adolescent psychiatry as well as trauma surgery.

The new hospital will be built by 2013 in the northern part of Vienna and will have 842 beds of the most recent standard, provided as single-bed or double-bed rooms. It will be operated as a specialised hospital.

The aim of this hospital concept is to expand hospital structures in keeping with the demographic development of the city and simultaneously transfer or close down hospital locations of the preceding centuries.

By doing so, hospitals with specific points of focus will be created, and optimised operating cost structures achieved.

Health Technology Assessment and IT innovation processes in radiology: Impact on healthcare system and organisation?

Dr. Marco Marchetti is the Director of the Health Technology Assessment (HTA) Unit of the Policlinico Universitario Agostino Gemelli, in Rome, and of the International Master Program in HTA and Management (http://www.ulyssesprogram.net/). He has a degree in medicine from the Università Cattolica del Sacro Cuore (Rome) and a postgraduate qualification in Hygiene and Preventive Medicine. His areas of expertise are in the following fields: hospital management, quality assurance, risk management, HTA.

Dr. Marchetti will speak at the IT Session of the symposium.

The idea is to explore the impact of the IT radiology innovation process both on the healthcare system and healthcare organisations according to the principles of Health Technology Assessment (HTA).

HTA is a multidisciplinary process producing information on the impact of introducing technology into healthcare systems. Furthermore, HTA is a useful tool generating information for the policy making decision process both in macro-level systems (national, regional level) and meso-level systems (institutional level or healthcare organisational level).

Information produced during HTA processes is related to different dimensions: effectiveness, economic, organisational, social, ethical and legal impact.

The objective of my speech will be to give an overview of the possible impact of IT applied in radiology on healthcare systems and organisations according to the different assessment aforementioned dimensions.

All this information can be used by policy makers at different levels in order to decide how to invest and manage technology (in our case IT technology) both in healthcare systems and in healthcare organisations.

ECR TODAY 2009 Friday, March 6, 2009 TECHNOLOGY FOCUS 

6th Hospital Management Symposium Saturday, March 7, 8:30–13.30, Room K organised in cooperation with
A novel approach to enhancing clinical flow images via computational fluid dynamics

By R. H. P. McGregor, D. Szczepa, G. Suckel, Computer Vision Laboratory, ETH Zurich/CH

Accurate patient-specific blood flow information is useful for understanding cardiovascular pathologies and predicting their onset and development. For example, in the case of abdominal aortic or cerebral aneurysms there is significant clinical interest in being able to make quantitative statements about the probable evolution of the disease. Obtaining accurate blood flow information is a key to achieving this. However, to date there are no clinical tools available for efficiently measuring these complex flow patterns in vivo. Both ultrasound (US) and phase contrast magnetic resonance imaging (PC-MRI) can be used as they are able to provide time-resolved three-dimensional flow fields non-invasively. However, they have limited resolution and suffer from low signal-to-noise ratio, in particular at low flow velocities.

To overcome these limitations one may use Computational Fluid Dynamics (CFD) in conjunction with medical imaging so as to obtain highly resolved time-dependent flow fields. This offers many advantages as it allows for any desirable level of detail and gives access to a wealth of data which typically cannot be observed directly. In addition, the applied numerical models can be extended to full fluid-structure interaction (FSI) simulations, which are able to provide information about the response of the wall in addition to blood flow dynamics. Despite the many fancy features numerical simulations offer, they also have severe drawbacks, which have kept them out of the clinics for the time being. These are mainly the computational time needed to run these calculations, which can take up to several months, and the need for a specialist to actually perform them. Another shortcoming is the fact that the available radiological data are usually only used for geometry generation and very little velocimetric information is actually taken into account, effectively downplaying the images’ contribution, thus reducing the patient-specificity of the resulting flow field.

We propose a completely new approach to combining medical imaging and CFD. The basic idea is to perform all the simulation work beforehand and outside the clinical setting. When a patient-specific measurement is performed, a high quality flow field can be interpolated based on the actually measured data and the previously collected simulation results, thus providing the desired information within an acceptable timescale and without resorting to any direct numerical simulation.

More specifically: for any given geometry, such as the abdominal aortic bifurcation for example, the first step is to generate a large database of many patient-specific flow or even FSI simulations. Once these are available, they are all registered onto a reference geometry, so as to make them comparable. A patient-specific flow measurement may now be performed and after some automatic pre-processing - namely segmentations, mesh extraction and registration with the reference geometry, an intelligent interpolation can be used to recover the full, high quality flow field from the database, using the measurement as input. This interpolation relies on an algorithm which is taken from statistical shape modelling and is in fact performed in the modal space after a principal component analysis is applied to the database. It is basically an optimisation that looks for the combination of the database’s principal modes that best fits the measurement data to within a tunable error margin.

We have tested this method using synthetic data and are now in the process of applying it to clinical datasets with very encouraging initial results. The method is able to provide good flow estimates based on noisy, poorly resolved measurement data. Indeed small scale flow details that were invisible in the measurements can be observed in the enhanced flow fields. Obviously the resulting flow field is not a physical solution to the given flow problem, but it does provide a fairly accurate insight into the patient’s hemodynamic condition. On the other hand the full enhancement can be done within a minute, as opposed to a lengthy full-blown simulation, making it a clinically feasible alternative. Another nice feature is the use of a maximal amount of velocimetric imaging data, thus guaranteeing that the enhanced flow field is a close match to the patient’s one even if the geometry reconstruction is inaccurate.

This enhancement technique seems to be very promising and could be used in a wide variety of applications, so much so that we have applied for a patent on it (PCT/EP2008/061078). At the IMAGINE exhibition we demonstrate the possibilities this new technology offers for improved diagnosis based on high quality patient-specific flow imaging.
Currently, mammography is the standard technique for routine breast cancer screening for women aged 50 years or more. The technique is relatively simple, cost effective and has been shown to reduce mortality for up to 30–40%. However, for women aged 40–49, it is not clear if screening mammograms help in reducing breast cancer death. Inherent limitations of mammography limit the effectiveness of the modality in depicting masses in dense fibroglandular tissue. This is a problem not to be easily disregarded in Japan, as Japanese women tend to have dense breasts. In addition, the breast cancer incidence rate in Japan is highest among women aged 40–49. This motivated the interest of the Japanese government to develop whole breast ultrasound scanner was specifically developed for breast cancer screening. In the general public who are not already diagnosed with the diseases, examinations using retinal fundus images are suitable for mass screening. CAD systems for detecting glaucoma, diabetic retinopathy and hypertensive retinopathy using retinal fundus images are the focus of this project. A new digital stereo fundus camera has been specially developed for the incorporation of CAD systems. The stereo retinal fundus image pair obtained using the new camera are used to generate depth maps of the optic nerve head and 3D retinal fundus images in the workstation. The computer-generated depth map of the optic nerve head enables automated quantitative depth measurement of the optic nerve head in a retinal fundus and is important for the diagnosis of glaucoma. The Department of Intelligent Image Information, Graduate School of Medicine, Gifu University, headed by Professor Hiroshi Fujita, is part of the Robotics Advanced Medical Cluster in Gifu-Ogaki, Japan, one of the eighteen cooperative research centers established across Japan since 2002 under the “Knowledge Cluster Initiative” of the Japanese Government, with the aim to promote industrial, academic and governmental cooperation in regional areas in Japan and to conduct innovative and technological research with a focus in advancing the Japanese technological industries.
Practical guidance direct from the vendor: the emergence of Industry Hands-On Workshops

By Simon Lee

The European Congress of Radiology has long been known for the outstanding quality of its educational programme, with a proud tradition of delivering the highest level of scientific content, ably assisted by the most prestigious names in radiology. As the specialty has become ever more complex, taking on new specialties and accounting for the rapid pace of progress, the educational programme has also become more complex, with a whole range of different courses and learning methods on offer.

Alongside this educational evolution, ECR has witnessed an increasing contribution from industry, to the point where the technical exhibition at ECR 2009 will span a grand 26,000m², filling the available exhibition space to bursting point. With the advances made in both of these areas of the congress, and bearing in mind the intrinsic importance of technology in radiology, it is unsurprising that the two threads should intertwine. Understanding the ubiquitous aspect of the specialty, the range of systems and equipment that play such a significant role in the radiologist's daily activities is of course key, and when it comes to the crunch, there is nothing more valuable than solid first-hand experience.

The Industry Hands-On Workshops have evolved from ECR's own Hands-On Workshops, which have been a growing part of its educational programme, with a proud tradition of delivering the highest level of scientific content, ably assisted by the most prestigious names in radiology. As the specialty has become ever more complex, taking on new specialties and accounting for the rapid pace of progress, the educational programme has also become more complex, with a whole range of different courses and learning methods on offer.

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The new exhibition, which will be shown for the first time at ECR 2009, again features more than 50 times throughout the world.

Expo A, stand 22.

For further information, please visit the Siemens Ultrasound Booth during the ECR at Extension Expo A, stand 20.

Industry Hands-On Workshops are CME accredited.

Visit the ECR 2009 Special Exhibition

‘Forensic Radiology’

A notable feature at the European Congress of Radiology is the special exhibition, initiated and compiled by Prof. Hermann Vogel from Hamburg, Germany, in cooperation with the Deutsches Röntgenmuseum, which has been part of the annual meeting for years. ECR 2009 is glad and proud that Prof. Vogel will again present his fascinating findings and his very particular view of imaging techniques.

This year’s exhibit is entitled Forensic Radiology.

Forensic radiology concerns the living as well as the dead. It uses x-rays in ways well-known from medical procedures and in non-medical ways. Living people are searched for drugs and weapons, and dead people are examined to determine the cause and circumstances of their death.

Forensic radiology is applied for the reconstruction of accidents and to prove crimes.

Prof. Hermann Vogel is head physician at the Albers-Schönberg-Institute, the department of radiology at St. Georg Hospital in Hamburg. He has contributed images from an international forensic radiology exhibition to the first ECR. This year there are 20 exhibits available, with legends in German, English, French, Polish and Arabic, which have been shown more than 50 times throughout the world.

The new exhibition, which will be shown for the first time at ECR 2009, again features more than 20 posters with partially provocative images. It will be presented on the first level of the congress venue opposite Room X.

The exhibition is free to the radiological community.

The Industry Hands-On Workshops

Saturday, March 7 and Sunday, March 8

Industry Hands-On Workshop organised by Carestream Health

Digital mammography self-assessment workshop. Run in conjunction with Redbud University Nijmegen/NL.

Monday, March 9

Customer Seminar organised by Siemens Healthcare Ultrasound

Siemens will hold a customer seminar on Advances in Ultrasound Strain Imaging, with particular focus on the use of our strain technologies in both liver and small parts imaging. An expert forum will present and discuss recent experiences with both Siemens Virtual Touch™ Imaging and eSie Touch™ Elasticity Imaging technologies.

This seminar will take place from 12:30–13:30, with a light lunch available. Places for this seminar are limited and will be allocated at the door. To avoid disappointment, please reserve a place using the form at the registration counters, but at the very least drop by to find out more or even try your luck at the registration counters, but at the very least prepare yourself to register in advance next year, as Industry Hands-On Workshops look set to be a big part of the future of ECR.

Friday, March 6 to Monday, March 9

Industry Hands-On Workshop organised by Siemens Healthcare

Benefit from clinical expert guidance and get an update on state-of-the-art techniques in CT, MRI and Molecular Imaging.

Friday, March 6 to Monday, March 9

Industry Hands-On Workshop organised by Philips Healthcare

Don’t miss the opportunity to get hands-on experience of post-processing and evaluating clinical cases supervised by expert radiologists.

By Simon Lee
Spirits of cooperation between radiology and emergency medicine brings results at one of Paris’ leading hospitals

Emergency Medicine is a guest of honour at ECR this year, with the much anticipated ‘ESR Meets Emergency Physicians’ session taking place tomorrow. ECR Today decided to learn more about the work of emergency doctors in Europe by visiting three different countries, three different cities, three different hospitals.

To open the series, this article looks at the daily working lives of staff in the emergency department at Hôpital Pitié-Salpêtrière, and how they collaborate with their colleagues in radiology.

By Mélisande Rouger

Eleven o’clock in the busy corridors of the Hôpital Pitié-Salpêtrière emergency department. Two policemen are waiting for a young man they just arrested to be examined; a patient is prossing a tissue covered with blood against his face; another lies on a bed, bringing a nurse, tiny and white, fly from one room to another. “Just a normal day,” comments Professor Bruno Riou, director of the department.

With 1,800 beds and more than 400 years of history, “La Pitié”, as the French call it, is one of the biggest hospitals in Europe. Its emergency department, one of the 24 emergency sites of the Assistance Publique Hôpitaux de Paris (AP-HP university-hospitals), is not the largest of the French capital but the only one providing maxillary-dental care. About 20,000 patients come here per year to be treated for maxillary or dental emergencies.

The hospital has divided its emergency care into seven subspecialties: general, maxillary-dental, neurovascular, accidents, recovery, intensive care, and resuscitation. The distribution of patients in the appropriate service is handled by the SAMU (Service d’Aide Médicale Urgente), a state organisation providing first aid and emergency care with competent emergency doctors, nurses, and ambulances.

On a daily basis, La Pitié provides emergency care to 130 patients, an average of 55,000 per year, excluding maxillary-dental care; 8,000 of these patients require hospitalisation; 5,000 of them for less than 24 hours. Those still in one of the twenty beds available in the general emergency department. To make sure that beds are free in time, emergency doctors need to make a diagnosis quickly so they can redirect patients to the appropriate service or send them home.

To receive a diagnosis in time, it is crucial that collaboration with the imaging department runs smoothly. The basis for effective cooperation is the local proximity between the two departments; in La Pitié, a ward of the radiology department, president of the medical board and vice-chairman of the executive committee of the hospital. Their collaboration now works so smoothly that the Assistance Publique Hôpitaux de Paris has developed similar guidelines.

However, Grenier rues the absence of clinical research protocols, prospective studies that would allow clinical evaluation. “There should be more radiological equipment available for emergencies, he believes. “We do 5,000 CT scans a year for emergencies alone with one CT scanner; one or two more wouldn’t hurt,” he says.

What radiology could do to improve its contribution to emergency care would be to educate radiologists, according to Grenier. Training the new generation of radiologists to give up emergency medicine is the French Emergency Medicine Society, which unite in a strong European level, with the development of the European level, with the development of the European Society of Emergency Medicine, which was created in 2006. It is also starting on the European level, with the development of the European Society of Emergency Medicine. But it might take time, as emergency medicine is a rather new specialty, recognised in only 10 of the 27 European member states. “We need strong national societies, which unite in a strong European society. It will come, but it will take time,” Riou concludes.

In France, cooperation has recently been put in place between the French Society of Radiology and the French Emergency Medicine Society, created in 2006. It is also starting on the European level, with the development of the European Society of Emergency Medicine. But it might take time, as emergency medicine is a rather new specialty, recognised in only 10 of the 27 European member states. “We need strong national societies, which unite in a strong European society. It will come, but it will take time,” Riou concludes.

ESR meets Emergency Physicians

Saturday, March 7, 16:00–17:30, Room C

EM 2 Time is life

President
B. Marincek, Zurich/CH
P. W. McCall, Gosport/UK
D. Olkin, Stockholm/SE

• Introduction
B. Marincek, Zurich/CH
G. Öhlén, Stockholm/SE

• Ultrasound as a time critical diagnostic tool for the emergency department
P.K. Thompson, Northampton, QL/UK

• The ultrasound exam: Radiologist’s view
G.H. Maltzack, Vienna/AT

• Overrading flow in the emergency department
M. Cooke, Warwick/UK

• Image triage: Ultrasound, CT or MRI
I.W. McCall; Oswestry/UK

• Panel discussion

Friday, March 6, 2009
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The RTF announces its activities for ECR 2009

By Christians Nyholm, RTF Chair

Who are we?

RTF is the Radiology Trainees’ Forum, which consists of one trainee national representative from each European member society of the ESR. It is therefore not possible to ‘join’ the RTF as such, but please do take part in the activities we offer at ECR and beyond. Further details can be found on the ESR website (we can currently be found under Education and RTF).

What have we got to offer at the ECR?

RTF Booth – Make it your meeting point! The RTF Booth (located in the entrance hall) has been a great meeting point in the past, where you can have a chat with members of the RTF executive board (we try to be there as much as possible during breaks) as well as other national delegates and trainees from all over the world.

RTF Highlighted Lectures – Something for everyone!

This year we have tried to cover three different areas that should be all essential for trainees. We are delighted to finally welcome Prof. E.J. Stern from Seattle, US, who will give us his best advice on how to get your paper published. As a deputy editor of AJR, he should know!

E.J. Stern; Seattle, WA/US

Top 10 mistakes of inexperienced authors. As a deputy editor of AJR, he should know!

You have the chance to win one of three radiology textbooks …

Simply attend the RTF Highlighted Lectures, your raffle tickets will be given out at the beginning. After each of the three presentations, one book will be given away to a lucky winner. Don’t miss your chance! For more details please visit our booth at the congress.

RTF Drinks reception – Join the fun …

There is no need to publicise this event further. The RTF Cocktail Party for trainees is a well established feature of the congress! Therefore we are delighted and grateful that GE is again prepared to sponsor this event (unfortunately the number will remain restricted to 250 due to cost constraints – we did ask!). To get your free ticket, please come along to the RTF booth. We will hand out one ticket per person no earlier than Friday during the ECR. The tickets have to be stamped at the GE stand. Do not leave it too late or you may not be able to join in the fun!

The RTF Trainees Forum

The Radiology Trainees Forum promotes and coordinates the efforts of radiology trainees at a European level in order to improve the progress of radiology and related sciences. Apart from that, one of RTF’s most important goals is to provide an equal level of radiological knowledge and skills for radiology trainees all over Europe.

Saturday, March 7, 16:00-17:30, Room K

TF 1 RTF Highlighted Lectures

Moderators:
P. Gaverde; Dublin/IE
D. Nyhuis; Sunderland/UK

• Top 10 mistakes of inexperienced authors
E.J. Stern; Seattle, WA/US

• Pitfalls in reporting major trauma
E.R. Paraskev; Jena/Germany

• Online radiology resources: Top 10 teaching websites and how to find them
E.R. Paraskev; Jena/Germany

New horizons of radiology in Estonia

By Pilvi Ilves, Tartu/EE; Estonian Society of Radiology

Estonia, the smallest of the three Baltic States, has undergone radical reforms within eighteen years of re-establishing independence in 1991. During the last decade of economic development, new hospitals have been built and the healthcare system modernised. Radiology in Estonia has made a rapid transition and not only offers up-to-date imaging services for local healthcare, but provides teleradiological services to other countries. Besides the modernisation of radiological equipment, Estonia has established e-government and e-health initiatives, as well as the world’s first nationwide PACS.

In conclusion, the small size of Estonia, which gives us the advantage of flexibility and the modern healthcare platform built up in Estonia during the recent years, gives us hope for further development. The focus on human potential and infrastructure can create a new high surplus value with the new horizons in radiology.
The composition of EURORAD: Introducing the sections and editors, part 1

By Stefanie Muzik

EURORAD is not only an excellent online database for radiological case reports, but also a good example of the European spirit and the international diversity of ESR. In today’s and tomorrow’s ECR Today we would like to introduce you to the team of section editors involved in EURORAD. We have asked them to tell us about their sections and work, as well as a little about themselves.

**Gastrointestinal Imaging**

"Once upon a time, barium radiology of the gastrointestinal canal was the bread and butter of gastro-intestinal radiologists. Today, imaging is much more complex. This section welcomes all aspects of the gastrointestinal canal such as ultrasound, CT, MRI, and nuclear medicine. And we do welcome cases that demonstrate advanced imaging techniques in common disease entities. However, do not hesitate to submit barium studies, because barium imaging shows imaging characteristics with both CT and MRI. We particularly welcome cases with a histopathological correlation. However, we will be happy to review any case related to imaging of the gastrointestinal tract. May I particularly invite you to submit cases related to our genetic population during 2009?"

**Genital (Female) Imaging**

"The section on genital female imaging is among the smallest sections in EURORAD. However, our case collection is continuously growing and almost half of the cases have been processed within the last two years. Our cases comprise all techniques in imaging of the genital female organs including imaging in pregnancy and prenatal diagnosis. We particularly encourage residents to contribute interesting cases to our section. We welcome rare pathologies and pathognomonic findings. However, we are especially interested in more common pathologies focusing on a special educational issue. As establishing a broad base of teaching cases is the main goal of EURORAD, we encourage you to submit cases that provide profound educational information, and cases with good quality images including the radiological-pathological correlations. However, cases illustrating normal anatomy or normal variants are also interesting for our section. Case illustrating normal anatomy or normal variants are also interesting for our section. Case material is categorised at different levels of expertise for teaching purposes. In particular, common pathology shown by various imaging techniques constitutes good education for residents and radiologists. Many diseases may manifest themselves in multiple presentations (typical and atypical manifestations); therefore, authors are invited to submit not only unusual case material, but also the spectrum of manifestations that can be observed in common pathology."

**Genital (Male) Imaging – Uroradiology**

"I recently took over the sections on uroradiology and genital (male) imaging. For me, any kind of case report is welcome that reports and explains common pathology, but also unusual or unexpected findings. Furthermore, I would like to promote knowledge about known and new disease processes. In the near future, we will put emphasis on case reports reflecting exciting new developments in the genitourinary field. Cases can be submitted via the website and, due to the new software, the work of authors and reviewers has greatly improved, accelerating the review process."

**Section Editor:** Prof. Silvia Ebing is Professor of Radiology at Lund University in Malmö/SE. "Within gastrointestinal radiology I have been particularly involved in research on normal and abnormal swallowing, small bowel, groin pain and defecography. My participation in EURORAD has been extremely rewarding because I am privileged enough to see all cases submitted to my section. This is a great educational experience. It also gives me great joy to see the high quality of European radiology."

**Cardiac Imaging**

"Cardiac cases that demonstrate unusual pathology, as well as cases that provide a good teaching point on common pathology, are highly appreciated. The work-up of a patient is preferably illustrated by including the clinical findings and conventional radiology findings, as well as by other imaging modalities (x-ray angiography, CT or MRI). For completeness, supporting evidence of the diagnosis is appreciated (pathology, clinical follow-up). The case material is categorised at different levels of expertise for teaching purposes. In particular, common pathology shown by various imaging techniques constitutes good education for residents and radiologists. Many diseases may manifest themselves in multiple presentations (typical and atypical manifestations); therefore, authors are invited to submit not only unusual case material, but also the spectrum of manifestations that can be observed in common pathology."

**Chest Imaging**

"For the chest section of EURORAD all types of interesting and well documented cases of thoracic radiology are welcome. In particular, we would encourage submission of cases of diffuse infiltrative lung disease, ideally with histopathological confirmation, well-documented cases of emergency and ICU chest imaging, and cases of chest tumours with an emphasis on the contribution of imaging for staging and therapeutic decision making. As the database contains several cases of normal variants and incidental benign abnormalities, those cases submitted from these fields should be characterised by exceptionally high quality and particularly thorough background information."
Jürgen Hennig was born in 1951 in Stuttgart, Germany. He earned a Ph.D. in physical chemistry from the Albert Ludwic Freiburg University. In 1973, he left for Switzerland where he undertook two years of post-doctoral study at the Department of Physical Chemistry of Zurich University. But he soon came back to Freiburg University to install a clinical MR institute at the Department of Radiology, where he headed research until 1992. He obtained full Professorship one year later.

In 1998 he was appointed Chairman of the section of Medical Physics of the service of diagnostic radiology, where he was appointed research Director three years later. The same year, he took the lead of the newly established ‘Magnetic Resonance Development and Application Centre’ (DERMAC) at Freiburg University. He has been Chair of the Scientific Director of the Department of Radiology – Medical Physics at the University Hospital Freiburg since 2004.

Prof. Hennig’s contribution to MRI has been crucial to the development of this modality. Under his leadership, the Freiburg MR research group has implemented new ideas and concepts for the use of MRI in a broad spectrum of applications. The measurement procedures they developed have since been implemented in all MRI devices worldwide, and are used for all MRI patient examinations. The core of their development work has been the establishment of fast and ultra-fast MRI, the functional imaging of brain and heart, molecular imaging for the development of highly selective contrast agents and new methods of MR imaging for the development and testing of new drugs.

These achievements have earned Jürgen Hennig the recognition of his peers and prestigious awards such as the European Magnetic Resonance Award, the Kernspintomographie Preis, and the Gold Medal of the Society of Magnetic Resonance.

He notably served as President of the International Society of Magnetic Resonance in Medicine (ISMRM). Laterly, he was honoured with the Max Planck Award in the category Medicine/ Life Sciences and the Albers-Schönberg Medal of the German Radiological Society. In 2006 he was appointed Scientific Director of the European Institute for Biomedical Imaging Research (EIBIR). Last but not least, he has recently been chosen as one of the recipients of the coveted European Research Council (ERC)-Advanced Grants.

Over the years, Prof. Hennig has also shown a real commitment to sharing his knowledge with colleagues from all over the world, and has been striving to develop cooperation between Europe and other continents. In 1985 he installed the first whole body MRI system in China. In 2002 he was offered a Dumbell-Chair for Neuroscience at the University of Oxford. He is Chairman of the Academic Committee for the National MRI Brain Mapping Centre in Beijing and President of the European Society for Clinical Magnetic Resonance. In 2013 he was awarded Honorary Membership by the Chinese Medical Society and Chinese Radiological Society. Finally, he is currently Chairman of the Scientific Advisory Board ‘Singapore Brain Imaging Center’, as well as a member of the Academy of Science of Tartus Republic.

He has been married since 1984 to Annemarie Hennig-Riegg with whom he has two children, Julian and Olvira.

For me professionally, ECR foremost presents the opportunity for personal discussions and communications with the members and soon-to-be members of the European Institute of Biomedical Imaging Research (EIBIR). In addition to the formal committee meetings and sessions, ECR provides the time and opportunity to discuss actual trends and opportunities with colleagues and individual members and to get a feeling for needs and trends in the community as a basis to formulate and steer the policy of EIBIR for the future.

Speaking as a scientist, ECR serves as an important ‘reality check’ to see which and to what extent the methodological and technological developments, which are the focus of my own work, are translated into clinical use. The scientific sessions of ECR also help to identify areas of need for further developments and to pinpoint the truly relevant questions and challenges to be approached and (hopefully) solved in the future.

Personally, I immensely enjoy the atmosphere and rich culture of Vienna – as far as the densely packed meeting calendar allows. Coming to Vienna is always something to look forward to, both professionally and personally. This year is of course even more special and I feel deeply honoured at being awarded Honorary Membership of the European Society of Radiology.

Eminent neurosciences researcher becomes ESR Honorary Member

In recognition of his outstanding career and his contribution to radiology, Professor James H. Thull from Boston, MA/US, will receive Honorary Membership of the European Society of Radiology at ECR 2009.

James Hunter Thull was born in 1943 in Ann Arbor, Michigan. He obtained his Bachelor’s degree in mathematics at the University of Michigan in 1964 and his medical degree from University of Michigan Medical School, Ann Arbor, Michigan in 1968.

He completed training in radiology and nuclear medicine at the Walter Reed Army Medical Center, Washington, D.C. where he subsequently served as the Assistant Chief of Nuclear Medicine from 1973-1975. He returned to the University of Michigan as Assistant Professor of Internal Medicine and Radiology in 1975 and was promoted to Professor in 1981.

Prof. Thull served for five years as Chairman of the Department of Radiology at the Henry Ford Hospital in Detroit, Michigan, where he was also a physician trustee and held the position of Vice-Chairman of the Board of Governors of the Henry Ford Medical Staff. He also served on the Board of Trustees of the Henry Ford Health Care Corporation.

In 1988, he was the first person to receive the Juan M. Tavera Professorship of Radiology at the Harvard Medical School and became Radiologist-in-Chief at Massachusetts General Hospital (MGH). Positions he has held since then.

He also currently serves as a Trustee of the Massachusetts General Physicians Organization and Chair of the Executive Committee of the Harvard Departments of Radiology.

Prof. Thull has worked extensively on the development of telemedicine systems and chairs the International Medicine Committee of the MGH. He has co-founded two companies in partnership with MGH to provide telemedicine and teleradiology services.

He is the Chairman of the Board of Directors at Mobile Aspects, a leading provider of radio frequency identification (RFID) tracking solutions for the healthcare industry, and the Chairman of the Board of Directors of WorldAid, Ltd. He notably co-founded WorldAid’s Clinical (WCC), an imaging CBO that provides end-to-end imaging services for clinical trials in the pharmaceutical, bio-technology, and medical device industries, in 1992.

In his own country, Prof. Thull serves on the Board of Trustees of the Research and Education Foundation of the Radiological Society of North America (RSNA), and the Board of Councilors of the Society of Chiefs of Academic Radiology Departments. He is a past President of the American Roentgen Ray Society and currently holds the position of Chairman of the Board of Councilors of the American College of Radiology.

The quality of his work has granted him prestigious awards such as fellowship of the American College of Radiology, the Excellence of Leadership award of the magazine Diagnostic Imaging and the Gold Medal of both the RSNA and the American Roentgen Ray Society.

Thull is an author of over 300 publications and reviews and is the founder and editor of the Radiology textbook series. He has served as the Perspectives Editor for the Journal of Radiology and is or has been part of the editorial board of the Journal of Nuclear Medicine, International Journal of Cardio Imaging, Investigative Radiology and Journal of the American College of Radiology.

“For me professionally, ECR foremost presents the opportunity for personal discussions and communications with the members and soon-to-be members of the European Institute of Biomedical Imaging Research (EIBIR). In addition to the formal committee meetings and sessions, ECR provides the time and opportunity to discuss actual trends and opportunities with colleagues and individual members and to get a feeling for needs and trends in the community as a basis to formulate and steer the policy of EIBIR for the future.

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Theresa C. McLoud was born in Boston, Massachusetts, USA. She graduated from Boston College with a Bachelor of Science in 1964. After receiving her medical degree from the McGill University Faculty of Medicine in Montreal, Canada, in 1968 she completed her residency in diagnostic radiology at the Royal Victoria Hospital, McGill University, under the tutelage of the eminent thoracic radiologist Professor Robert Fraser. She then completed a thoracic imaging fellowship at the Yale University School of Medicine in New Haven, Connecticut, under the direction of Professor Richard Greenspan, founding member and former President of the Fleischer Society.

After her fellowship, she soon became Assistant Professor of diagnostic radiology at Yale. She later returned to Boston and joined Harvard Medical School, where she was appointed as Chief of Thoracic Radiology at Massachusetts General Hospital (MGH) in 1982 and Chief of Thoracic and Cardiac Radiology in 1996. She was promoted to Professor of Radiology at Harvard Medical School in 1993, becoming both the first woman to serve as a section chief in the MGH Department of Radiology and the first woman in departmental history to hold professorial rank and make career accomplishments of this order. Also in 1993, Harvard awarded her an honorary Master of Arts degree. She is currently the Associate Radiologist in Chief at the MGH.

A world-renowned thoracic radiologist, Prof. McLoud has conducted more than 150 postgraduate courses and published more than 200 scientific papers, reviews and book chapters. She has authored seven books and monographs on thoracic radiology. In 1998 she published ‘Thoracic Radiology’ - The Requested, a popular and comprehensive introductory text for residents beginning in thoracic imaging and preparing for the board examination. Dedicated to educating her peers, Prof. McLoud has been the Program Director and Director of Education in the 36th Department of Radiology since 1997. She also served as the Liaison for Education on the Board of Directors of the Radiological Society of North America (RSNA). She has been actively involved in the development of Maintenance of Certification programmes for practicing radiologists and curriculum development for residents. Her excellent teaching skills are reflected in the great number of invitations she receives to conduct educational programmes around the world.

Her research interests have been in interstitial lung disease, CT of the thorax, lung cancer imaging and occupational lung disease. Her outstanding accomplishments in these fields have earned her the Marie Curie Award of the American Association of Women Radiologists and the Gold Medal Award of the American Roentgen Ray Society.

She has served as President of the New England Roentgen Ray Society, the Fleischer Society for Chest Disease, the Society of Thoracic Radiology and the American Roentgen Ray Society, and she is the immediate Past President of the RSNA. She is also an honorary member of the Chicago Radiological Society, the Chilean Society of Respiratory Diseases and the Royal Australian and New Zealand College of Radiologists, the Italian Society of Radiology in Medicine and the Spanish Society of Radiology.

In recognition of her fantastic achievements in thoracic radiology and her commitment to radiological education, Professor Theresa C. McLoud from Boston, MA/US, will be awarded Honorary Membership of the European Society of Radiology at ECR 2009.

By Mélisande Rouger

Ho-Young Song was born in 1954 in the Republic of Korea. After he graduated in 1979 from Chonbuk National University in Jeonju, he specialised in radiology at Chonbuk and received his board certification in April 1983. He started to work as an instructor of radiology at Chonbuk National University Medical School in 1986 while he did his Ph.D., which he completed in 1987.

He soon became Assistant Professor and Associate Professor of Radiology. In 1993 he joined the Asian Medical Center at the University of Ulsan College of Medicine in Seoul, where he obtained full professorship five years later. In 2002 he was appointed Chairman of the Department of Radiology at Ulsan before becoming Chief of Vascular and Interventional Radiology in March 2006.

A prolific and innovative researcher in both interventional and cardiovascular radiology, Prof. Song holds 19 patents including the Eurostar patent for a self-expanding endovascular stent. The excellence of his work has led him to travel extensively and he has been a visiting professor at numerous universities in Japan, the USA, Spain and Sweden. He has been invited to speak at 262 lectures all around the world.

Prof. Song has received numerous distinctions for his pioneering contributions, including the Grand Prize Award from the Korean Medical Association, the Scientific Paper Award Grand Prix from the Korean Radiological Society and the Most Distinguished Scientist Award from the hands of South Korean President Myung-Bak Lee. He has also been duly rewarded for his excellent scientific papers and poster presentations at several meetings of the Radiological Society of North America (RSNA).

He is an eminent member of the Korean Radiological Society, where he serves on the Scientific and Board Examination Committee. He is also a member of the Korean Society of Medical Biochemistry and Molecular Biology, the Korean Society of Cardiovascular Interventional Radiology, and the Radiological Society of North America (RSNA). In addition, he has been a member of the Cardiovascular and Interventional Radiological Society of Europe (CIBIS) since 1999 and of the Society of Interventional Radiology USA since 2006.

He has published 12 book chapters, 228 articles and tendered 373 scientific papers. He is a reviewer and Editorial Board Member for the Journal of Cardiovascular and Interventional Radiology, reviewer for the Journal of Vascular and Interventional Radiology and serves on the Editorial Board of the Korean Journal of Radiology and the Journal of Chinese Interventional Radiology. Previously, he had served as Editor-in-Chief of the Journal of the Korean Interventional Radiological Society, and as Deputy Editor at the Korean Radiological Society.

In recognition of his exceptional achievements and pioneering work in both interventional and cardiovascular radiology, Professor Ho-Young Song from Seoul/Korea will be presented with Honorary Membership of the European Society of Radiology at ECR 2009.

By Mélisande Rouger

“I have been very fortunate to attend ECR’s annual meeting for the past several years. I have also been delighted to participate in the educational programme as a moderator and course speaker in thoracic radiology. The ECR is truly one of the most internationally eminent meetings in radiology. It combines state of the art educational content with ground breaking scientific research. During my tenure on the Board of Directors of RSNA, I have had the opportunity to form friendships with many of the leaders and members of ECR. I feel privileged to have had the opportunity to facilitate cooperative efforts between ECR and RSNA. I personally wish ECR a most successful meeting under the leadership of Prof. Borut Martinic.”

World-renowned thoracic radiologist becomes ESR Honorary Member

Distinguished expert in interventional radiology receives ESR Honorary Membership

“For me, as well as a great number of radiologists from around the world, young and fresh or old and experienced, ECR has been one of the great, strong stages on which we are able to show and share an endless variety of invaluable, on-the-spot experiences leading us into profoundly divergent debates and experiments and also a door to the astonishing academic world of radiology. For us, ECR has been a rich source of knowledge to nourish us, with its wide selection of quality papers, state-of-the-art workshops, and distinguished lectures, so that we could play a part in changing the medical world for the better. So, for us this is the meaning of ECR, to which we are always grateful for its guardianship.”

ECR TODAY 2009

Friday, March 6, 2009

COMMUNITY NEWS

myESR.org
What’s on today in Vienna?

**Theatre**

Please note that all performances, except at Vienna's English Theatre, are in German!

### Akademietheater
1030 Vienna, Lisztstrasse 1  
phone: +43 1 51444 4145  
www.burgtheater.at

**18:00**  
Die Brüder Karamasow  
by Fyodor M. Dostojewskij

### Burgtheater
1010 Vienna, Dr. Karl-Lueger-Ring 2  
phone: +43 1 51444 4145  
www.burgtheater.at

**19:30**  
Trilogie des Wiederehens  
by Botho Strauß

### Ensembletheater
1010 Vienna, Petersplatz 1  
phone: +43 1 535 32 00  
www.ensembletheater.at

**19:45**  
Eskalation ordinär  
by Werner Schwab

### Rabenhof
1030 Vienna, Rabengasse 3  
phone: + 43 1 712 82 82  
www.rabenhof.at

**20:00**  
Die deutsche Kochschau  
Anarchistic, iconic Austrian cabaret by and with Dirk Stermann and Christoph Grossmann

### Schauspielhaus
1090 Vienna, Porzellangasse 19  
phone: +43 1 317 01 01  
www.schauspielhaus.at

**20:00**  
Zwei arme Polnisch sprechende Rumänen  
by Domsta Masłowska

### stadTTheater
1010 Vienna, Währingerstrasse 4  
phone: +43 1 512 42 00  
www.stadttheater.org

**20:00**  
Cabaret der verlorenen Seelen  
Musical by Christian Simon and Patrick Laviosa

### Theater in der Josefstadt
1080 Vienna, Josefstaedter Straße 26  
phone: +43 1 42 700 300  
www.josefstadt.org

**19:30**  
Aus dem Leben der Marionetten  
by Ingmar Bergman

### Vienna's English Theatre
1080 Vienna, Josefsgasse 12  
phone: +43 1 402 12 60 0  
www.englishtheatre.at

**19:30**  
The Price  
by Arthur Miller

### Volkstheater
1070 Vienna, Neuillsgasse 1  
phone: +43 1 53111 400  
www.volkstheater.at

**19:30**  
Drei Schwestern  
by Anton Tschechow

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**Concerts & Sounds**

### Musikverein (Classical Music)
1010 Vienna, Bösendorferstrasse 12  
www.musikverein.at

**19:30**  
Vienna Symphony Orchestra  
conductor Andrey Boreyko  
R. Buchbinder, piano  
C. Debussy, M. Ravel, A. Zemlinsky

### Porgy & Bess (Jazz)
1010 Vienna, Riemergasse 11  
www.porgy.at

**20:00**  
Bernie Worrell / Blackbyrd McKnight / TM Stevens / Brain ‘SocialLibrium’

### Szene Wien (Alternative Music)
1110 Vienna, Hohegasse 26  
www.szenewien.com

**19:45**  
Sorgnic

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**Opera & Musical Theatre**

### Theater an der Wien
1010 Vienna, Linke Wienzeile 6  
www.theater-wien.at

**19:00**  
Partenope  
by Georg Friedrich Händel  
conducted by Christophe Rousset  
with Christine Schäfer, Kurt Streit, David Daniels, Patricia Bardon, Florian Boesch

### Volkstheater
1090 Vienna, Währingerstraße 78  
www.volkstheater.at

**19:00**  
Guys and Dolls  
Musical by Frank Loesser

### Wiener Staatsoper – Vienna State Opera
1010 Vienna, Opernring 2  
www.wiener-staatsoper.at

**19:30**  
Die Fledermaus  
by Johann Strauss  
conducted by Michael Halasz  
Ballet choreographed by Roland Petit

### Raimundtheater
1010 Vienna, Wallgasse 18-20  
www.musicalvienna.at

**19:30**  
Rudolf – The Mayerling Affair  
Musical by Frank Wildhorn & Jack Murphy
Experience Vienna’s operatic artistry

La Bohème or Tosca by Puccini, Carmen by Bizet, Falstaff by Verdi and the inimitable Seiji Ozawa conducting the première of Tchaikovsky’s Eugen Onegin; the programme of the Vienna State Opera will fulfil the dreams of every opera aficionado, with some help from the Theater an der Wien, the Wiener Kammeroper and the Volksoper.
Reaching the highest ethical standards

By Lucie Motlisch

An ethical approach to investigation is one of the most important issues in biomedical research. Although there are numerous national and international ethical principles and regulatory guidelines that provide a framework within which studies can be planned and conducted, investigators are sometimes confronted with difficult questions. The research subjects, often volunteers, will usually expect an improvement of their situation, thus they might ask whether the risks and side-effects outweigh the anticipated benefits. After carefully assessing the predictable risks and burdens to the study participants, the researchers have to decide whether they are acceptable within the context of ethical principles and regulatory guidelines and in view of the potential benefit for the individuals involved or the group they represent.

The ethical justification and validity of research is based on a considerable number of regulations, which can be quite complex and require a profound knowledge of the subject. What is considered perfectly ethical in one country, for example conducting an observational prospective studies without explicit consent of the participants, may be illegal in another and may prevent the study from being published in a journal based in the latter country. In our December ESR News-letter 05/08, we gave an overview of the most important international regulations on research ethics in human studies and animal experimentation, and the problems researchers should be aware of. Apart from correctly estimating the accuracy, reliability, clinical value and risk/benefit ratio of a study design, it is also essential to take into account all the applicable codes of conduct to make sure the investigation is based on the highest ethical standards.

Linda A. Everse, Ph.D., is Research Coordinator for the Department of Radiology at Erasmus University Medical Center Rotterdam. As such she is responsible for all ethical regulations involved in performing research. Dr. Everse contributed substantially to the development of the Principles of Good Research Practice in Biomedical Imaging published by EIBIR, The European Institute for Biomedical Imaging Research. In the following interview she talks about the difficulties investigators can face in the course of their research and what measures can be taken to reinforce ethical behaviour in science.

ECR Today: Protecting the rights of research participants is an important issue in biomedical research – how do you promote ethical and responsible research practices?

Linda A. Everse: The Research Office in our department provides standardized support services for our researchers and also functions as a threshold for research methodology and ethics. Furthermore, we provide a clear and approachable point for all radiology researchers to come with any questions they may have about the research process, including ethical and legal requirements.

The most important issues to consider are a solid research methodology as the basis of ethical research, providing clear explanations about the risks, burdens and potential benefits to the research subjects, and the approval of the study design by an ethics committee. Unambiguous policies help to clarify how to handle these issues.

The next most important step is good communication with the test subjects, by which I mean providing clear explanations in terminology that the subject can understand, both of the procedures (what is extra for research and what would be done for medical reasons anyway?) and of the risks, burdens, and potential benefits involved. Only if the test subject under-stands what is expected of him/her and what the risk/benefit balance is, can that person make a truly informed decision about participating in a study.

Additionally, knowledgeable sources of assistance for the researcher promote high quality as opposed to acceptable quality. These resources may be made available at department level, like in my department, or at an institutional level, but they should be highly visible to the researchers, including new employees.

ECRT: What guidelines should investigators follow to make sure they come up to the highest ethical standards for research involving human subjects?

LE: Obviously the Declaration of Helsinki and its amendments are the very least to which every clinical research protocol should adhere. And the investigators should be aware of and adhere to all applicable rules and regulations, which can be more extensive than they expect. I advise all my researchers to imagine that a close, elderly relative without medical training – someone like their mother or grandmother – would be taking part in this study under another researcher! How would they want their relative to be treated by the independent researcher? What information should their relative give and by whom? While perhaps trite, it is a good means to examine how your study will be viewed by the participants.

What is very important to realise, however, is that ethics are by no means an absolute. While we generally agree about extreme cases, there is no black-to-white transition from ‘ethical’ to ‘not ethical’ – it is a very grey area with complex shading. What we consider ethical changes over time, and different cultures can have huge differences in what is considered most ethical. In the US, where I grown up and was educated, it would be unthinkable to prospectively use a patient’s data without explicit consent. In the Netherlands, where I now live and work, a patient gives implicit consent for the use of their medical data for scientific purposes by allowing themselves to be treated in a university hospital. If they do not want their data to be used, they must actively refuse. Everyone knows and has the option to take one or the other. If this is not allowed to tell them if something is found. This can be extremely burdensome to the investigator, especially if it is a dangerous but treatable abnormality. In fact, I consider it reasonable to exclude subjects who do not wish to be informed of incidental findings from participation in a given research study.

ECRT: What is the basic principles regulating animal experimentation?

LE: Animal experimentation is only acceptable when there are no feasible alternatives, the methodology is sound, animal suffering is minimised, and the knowledge to be gained is sufficiently important to justify the inevitable animal suffering. The global scientific community accepts the 3R-approach (Replace, Reduce, Refine) as an ethical approach to animal use.

ECRT: What is your ‘take-home message’ on ethical dilemmas in imaging research?

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