Welcome to the 20th European Congress of Radiology in Vienna

It is a great personal pleasure for me to welcome you to the European Congress of Radiology (ECR). Every ECR that I have attended has been a unique and unforgettable event, and I am absolutely sure that ECR 2014 is going to continue this brilliant chain of outstanding meetings. I am also very proud that ECR 2014 is a jubilee meeting – it is the 20th congress in the modern history of the event, counting from the pivotal year of 1991 when it was completely re-designed and held in Vienna for the first time. Of course the history of our congress is much longer than that, but for most radiologists and guests of the ECR this meeting has become forever associated with the beautiful city of Vienna. The scientific and educational programme for this congress is the result of the great efforts of hundreds of people who have worked on it every day since the second half of 2013. I would like to express my deepest gratitude to the ECR 2014 Programme Planning Committee, the Chairs and members of the Scientific Committee, Subspeciality Societies and, of course, to the ESR office staff.

In my opinion (and I hope that you agree with me) the ECR represents the most advanced, sophisticated, basic and advanced topics in modern radiology. With so many educational and scientific sessions containing vital clinical information and cutting edge science, it is no wonder that the congress has become a global event rather than a purely European one.

One new innovation especially for ECR 2014 is the Multimedia Classroom, which has been launched under the guidance of Dr. Emanuele Neri and Dr. Daniele Regge. The ECR has created a special auditorium with a network of workstations from several leading vendors. These new facilities will be used to present multimedia sessions, each including discussion of three selected cases, which will last for 90 minutes and take place on Saturday and Sunday. I strongly encourage you to stop by and take part in this interesting new project.

Another important feature of this congress will be full digital and web coverage of the meeting. At ECR 2014, our latest initiatives like ECR Live and the Social Media Wall were extremely well received by congress participants. At ECR 2014, the web streaming service, ECR Live, will cover the vast majority of educational and scientific sessions, and the recordings will be available via the ESR website both during and after the congress. It looks like it will be another great innovation from the ESR (just like EPoS, launched in 2009), which will be admired and adopted by other medical congresses.

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It is very difficult for me to pick out any specific recommendations from the programme. Each topic area has been put together with so much care, that it feels impossible to single anything out. You will have to examine it closely and make your own choice, but I believe that anyone’s must attend list should include the Opening Ceremony, the Honorary Lectures, and of course the ESR meets ... Sessions. Our guest countries in 2014 are Russia, Mexico and Serbia, all of whom will put on fascinating sessions, plus our partner discipline this year is cardiology, represented by the European Society of Cardiology. All of these will bring a very welcome new perspective to the ECR. I hope you will find the time to visit the Image Interpretation Quiz corner and the Image Interpretation Quiz Quiz, ingeniously named the “Egyptian Pyramid Quiz” by its moderator, Dr. Sofia Gourtsoyianni.

From year to year we have seen more and more radiographers and medical physicists at the ECR. Being the first ECR president from Russia, I am very happy that, as well as the ESR meets Russia session the European Federation of Radiographer Societies will hold their own meeting at the ECR 2014 congress. Both these events are of great importance for the further development of radiology in my country.

Beyond these special highlights, the selection of New Horizons, State of the Art, Professional Challenges and Multidisciplinary Sessions on offer this year covers a huge range of hot topics that is sure to cater to any attendee’s tastes. Add to that another great set of Categorical, Refresher and Mini Courses plus the many Accompanying Sessions and company Satellite Symposia, and you can see how most ECR participants end up with a very hectic schedule.

As you can see, this year’s programme offers you a lot of interesting and attractive events to take part in. I hope that you will also find some time to enjoy the many cultural highlights of marvellous Vienna, as well as the hotly anticipated evening highlights of the congress, the ECR Party which will be held at the Praterdome on Sunday, March 9. Come and dance the night away!

I sincerely hope that this congress will follow in the win of its predecessors and be a forum for exchanging new knowledge, sharing scientific ideas, inspiring new research and acquiring new contacts for further cooperation. As a result, ECR 2014 will contribute to the further development and improvement of our favourite specialty – radiology.
Siemens is looking forward to welcoming you at ECR 2014. Again we dedicated special symposia to Women’s Health at ECR – this year in cooperation with Bayer Healthcare. The CME accredited satellite symposia will be delivered by some of the world’s expert clinicians and covered exciting news in the field of breast care.

We also invite you to visit the Siemens Booth #11 located in Extension Expo A, Entrance Level.

Breast Care Symposia: Studio 2014, Austria Center Vienna
10:30 –11:30 Beyond imaging in Breast MR
12:00 –13:30 Multimodality Lunch Symposium
14:00 –15:30 Digital Breast Tomosynthesis and low dose Mammography

Industry Workshops: Siemens Experience Lounge, Entrance Level (next to Exhibitor Registration)
14:00 –15:30 Breast MRI Reading Session
16:00 –17:30 Breast Tomosynthesis Reading Session

Answers for life.
BY GUY FRIJA, ESR PRESIDENT

ESR takes leading role in personalised medicine and radiation protection

I am delighted to welcome you all to ECR 2014, the annual meeting of the European Society of Radiology (ESR) and the highlight of our year. As always, the ECR offers us tremendous opportunities to meet people and discuss the current trends in our specialty, learn from our colleagues via the scientific and educational programme, and discover the latest technological developments offered by our industry counterparts. These opportunities taken individually may not be unique, but package them all together, and add the special atmosphere of the ECR, and you have an experience that is not to be missed, as any previous participant knows.

During the last twelve months it has been a pleasure for me to observe the progress of the preparation for this congress. The programme planning committee and all of the sub-committees have worked very hard to compile an outstanding catalogue of sessions, all under the able leadership of Prof. Valentin Sinitsyn. I would like to extend my deepest thanks and most sincere congratulations to Valentin for what I believe will one of the best congresses we have seen here in Paris.

Of course, the ECR also marks the point where the reins of the ESR presidency are handed over. I am pleased to look back on a thoroughly satisfying year, during which advances have been made on several key issues for the ESR. In many ways, this has been the year in which our society has made a slight but significant role in the funding of the ESR almost a decade ago, our agenda has gradually evolved to the point where the width of our scope goes far beyond issues that affect our immediate radiological family. We are now beginning to put far more emphasis on the wider healthcare community and, most importantly, our patients, as exemplified by our work this year in the fields of personalised medicine, radiation protection, and public relations.

As a society we are already playing an active role in achieving the reality promised by personalised medicine. Few specialties are as integral to this new healthcare paradigm as ours, and this is why the ESR has taken a leading role in the discussion at EU level. Towards the end of last year the ESR held a special event at the European Parliament, with the aim of alerting EU officials to the crucial role of imaging in the era of personalisation. The outcome was extremely encouraging, with Euro-pen Commission representatives giving clear indications that personalised medicine is very much in line with the EU’s current approach to healthcare sustainability. There is still much more work for us to do in this field, but it is clear that we are heading in the right direction.

Radiation protection is of course a crucial topic for the whole spectrum of radiological professions, but even more so for our patients. In every examination that uses ionising radiation we have a major responsibility to control the radiation dose as far as is reasonably possible and reduce unnecessary exposure. This is why the ECR 2014 Opening Ceremony will see the official launch of the EuroSafe Imaging campaign, which is intended to promote the use of diagnostic reference level, awareness of the as low as reasonably achievable (ALARA) principle, and general appropriateness in imaging. The campaign website is already up and running, but the official launch will also be complemented by an ECR session on dealing with the challenges of radiation protection, as well as a special poster session in the M building, featuring material submitted by radiological societies and commercial companies from around Europe. I strongly encourage you all to attend both and visit Eurosafe.org to become a friend of Eurosafe Imaging.

On a similar theme, November 8 saw the International Day of Radiology (IDDR) taking place, with a huge degree of participation and some highly encouraging coverage. This day of celebration is the most direct attempt that we, and our colleagues at the American College of Radiology and Radiological Society of North America, have made at addressing the public and raising awareness of radiology. This is not for our own vanity, but to take some steps toward demystifying the specialty and familiarising the public with this integral part of modern healthcare. The idea is only two years old and there is still room to expand the initiative, but the enthusiastic response to the first two IDDRs has shown that the day could grow to become very popular. I am very happy to announce that plans for IDDR 2014 are already underway and that the theme for this year will be brain imaging.

Returning to the ESR’s more traditional areas of activity, I am also delighted to have overspread the introduction of the new ESR online learning hub. The plan to put together a comprehensive collection of learning resources that reflect the carefully refined European Training Curriculum have been a long time in the making. The ESR has long recognised the need, not only to set out the framework for training, but to provide clearly categorised, modular learning material to enable people to manage their own continued professional development. The new service will not only fill this gap, but it will also strengthen the connections between the ECR programme and the educational opportunities offered by the ESR during the rest of the year, such as European School of Radiology courses, publications, and existing tools.

Of course, there are few educational opportunities for radiographers and radiographers that are better than the European Congress of Radiology. I hope that whatever we provide online, you will always recognise the value of coming together with your friends and colleagues from across the world, to meet in person and learn from some of the finest educators in our field. I hope you will enjoy ECR 2014 as much as I will.

Opening Ceremony
Thursday, March 6, 17:45–18:35, Room A

Welcome Addresses
Guy Frija, Paris/FR
ESR President
Valentin Sinitsyn, Moscow/RU
ECR 2014 Congress President

Presentation of ESR Honorary Membership to
Sarah S. Donaldson, Stanford, CA,US
Herbert V. Kursch, Boston, MA,US
Kazuro Sugimoto, Kobe/JP

Opening Lecture
Etudes in space radiology
Oleg J. Atkov; Moscow/RU

Special guest: Lidia Baich, violin
Opening Lecture set
to be out of this world

In recognition of his international career and his outstanding achievements, the European Society of Radiology has invited Professor Oleg J. Atkov from Moscow, Russia, to deliver the Opening Lecture ‘Etudes in space radiology’ at ECR 2014.

Oleg J. Atkov is professor of medicine and head of the instrumental diagnostic methods department of the Russian National Research Medical University. He is also vice-president of Russian Railways with responsibility for healthcare. In 1973, Prof. Atkov graduated from I.M. Sechenov First Moscow State Medical University and later received his doctorate in cardiology from the Russian Academy of Medical Sciences. He gained early recognition in his career for his work developing the ultrasound diagnosis of cardiovascular diseases. In 1984, his career reached new heights when he travelled to the Soviet Salyut-7 space station to spend a record-setting period of 273 days in space as a cosmonaut-researcher. He performed medical research projects using ultrasound equipment during his time on the space station.

After returning to earth, Prof. Atkov began working at the Russian Institute of Clinical Cardiology, where he became head of the department of new diagnostic methods. He has also been working with the International Space University in Strasbourg, France as a visiting professor since 1989. Throughout his career Prof. Atkov has been dedicated to realizing the major potential of telemedicine, and he served as president of the Russian Telemedicine Association since 2001. In 2013, he became head of the Russian Railway Ministry’s department of health, and continued working as head of medical care after the Ministry was reformed to become JSC Russian Railways. He was then later promoted to vice-president with responsibility for healthcare. Under his supervision, Russian Railways established a mobile telemedicine project using special medical trains to deliver healthcare to remote areas which have no access to conventional facilities. This innovative project has vastly improved the quality of life for many Russian citizens and so it was awarded a special prize from the Russian Government.

Prof. Atkov has authored more than 150 articles and several monographs. He has 10 inventions and seven patents to his name. He has supervised more than 100 international students in the world and received an honorary doctorate from the Humboldt University of Berlin.

Prof. Atkov’s opening lecture is entitled ‘Etudes in space radiology’ and will be held this afternoon during the Opening Ceremony in Room A.

ESR awards Honorary Membership to pioneer in magnetic resonance

In recognition of his groundbreaking research in magnetic resonance imaging and his dedication to international cooperation among radiologists, Professor Herbert Y. Kressel from Boston, United States, will be awarded Honorary Membership of the European Society of Radiology at ECR 2014.

Herbert Y. Kressel is Miriam H. Stoneman Professor of Radiology at Harvard Medical School in Boston/US. He also serves as editor of the journal Radiology and as science editor of the Spanish Society of Medical Radiology. He has been appointed honorary chief radiologist of the Humboldt University of Berlin.

Prof. Kressel has been a visiting professor at the University of Pennsylvania in 1972, before moving on to work as a radiology resident at the University of California, San Francisco until 1975. In 1976, he served as a clinical instructor at the University of California, San Francisco and received his PhD in 1977. He was subsequently appointed assistant professor of radiology at the University of Pennsylvania in 1977. He was subsequently appointed assistant professor three years later before becoming a full professor of radiology at the University of Pennsylvania in 1983. Prof. Kressel is an experienced clinician and during his career he has shared the Society of Magnetic Resonance’s inaugural Cruss-Kressel Award for outstanding achievements in MRI technologists education with John Crass UI in 1991. He also received the Sylvia Sorkin Greenfield Award from the American Association of Physicists in Medicine and the Silver Medal of the Society of Magnetic Resonance, as well as the RSNA’s Gold Medal award in 1992.

His achievements have also been recognized on the other side of the Atlantic; he is an honorary member of the German Society of Radiology, the French Society of Radiology and as editor of the Chinese Journal of Radiology.
Renowned specialist in paediatric radiation oncology receives ESR Honorary Membership

In recognition of her major contribution to transatlantic scientific cooperation and her years of service to healthcare, Professor Sarah S. Donaldson from Stanford, United States, will be awarded Honorary Membership of the European Society of Radiology at ECR 2014.

Sarah S. Donaldson is the Catharine and Howard Avery Professor at the department of radiation oncology at Stanford University’s School of Medicine. She is also associate director of the residency programme at Stanford’s department of radiation oncology and chief of the radiation oncology service at the Packard Children’s Hospital in Palo Alto, California.

A native of Portland, Oregon, Prof. Donaldson completed her undergraduate degree and nursing studies at the University of Oregon before going on to receive her postgraduate medical degrees from Dartmouth Medical School in New Hampshire and Harvard Medical School in Boston. During her nursing studies she was named Student Nurse of the Year and was awarded scholarships for her studies at Dartmouth and Harvard. After finishing an internship in internal medicine at the University of Washington Hospitals, she began her residency in radiation oncology at Stanford University Hospital. She then travelled to Europe to begin a fellowship at the Institut Giguere-Roussy in Villejuif, France. Upon her return to the US, she became assistant professor of radiology at the Stanford School of Medicine.

“Forty years ago, I had the good fortune to spend a fellowship at the Institut Giguere-Roussy in Villejuif, France. That experience not only introduced me to the European way of life, it also confirmed my desire to be an academic clinician-investigator with a focus on the management and treatment of patients with cancer. During my fellowship I was introduced to the scientific method of investigation, and the importance of global partnerships. The professional colleagues I met at that time have become lifelong friends. I very much value my associations with European radiologists and radiation oncologists, and appreciate the many lessons I have learned from them,” said Prof. Donaldson as she recalled her time in Europe.

Prof. Donaldson is widely regarded as an authority in paediatric radiation oncology and is known for her work in developing innovative treatments for paediatric Hodgkin’s lymphoma and rhabdomyosarcoma. Her other research interests include the late effects of cancer and its treatment.

A popular and engaging teacher, Prof. Donaldson has received a number of prestigious awards for her teaching and leadership within Stanford’s radiation oncology department and the Stanford School of Medicine. Among these awards were the Deans Medal, the Hoepke Leadership Award and the Kaplan teaching Prize.

Prof. Donaldson was the first female president of the American Board of Radiology and the American Society for Therapeutic Radiology and Oncology. She also served on the board of directors of the American Society of Clinical Oncology and she was the 15th president of the Radiological Society of North America. She has received numerous awards in recognition of her contributions to international cooperation, including honorary membership of the European Society for Therapeutic Radiology and Oncology and the Canadian Association of Radiation Oncologists.

Ambassador of Japanese radiology receives Honorary Membership of ESR

In recognition of his dedication to international cooperation and scientific exchange, Professor Kazuro Sugimura from Kobe, Japan, will receive Honorary Membership of the European Society of Radiology at ECR 2014.

Kazuro Sugimura is professor of radiology and chairman of the department of radiology at Kobe University Graduate School of Medicine in Kobe, Japan. He is also director of Kobe University Hospital. Prof. Sugimura earned his M.D. degree in 1977 and doctorate in 1983 from Kobe University Faculty of Medicine in Hyogo, Japan. In 1988, he travelled to the United States for a research fellowship at the University of California, San Francisco. After returning to Japan, he resumed his post as associate professor of radiology at Shiman Medical University until 1994, when he was promoted to full professor of radiology and became chairman of the department of radiology. He then moved back to his alma mater in 1999 to assume his current posts as professor of radiology and chairman of the department of radiology.

A well-known champion of genitourinary imaging, Prof. Sugimura served as one of the American Society of Radiation Oncology’s directors-at-large and, in 2002, he established the Japanese Society for the Advancement of Women’s Imaging, and served as its president for eight years. He also established the Japanese Society of Uroradiological and Therapeutic Technology in 2013 and served as president. He sits on the Radiographics Women’s Imaging Panel for the Radiological Society of North America (RSNA).

“I believe that my mission is to convey my deep impression about this meeting to Japanese radiologists. All those wonderful experiences have broadened my horizons, and this distinguished membership has opened up another new world to me. I accept this award with pride on behalf of Japanese radiologists,” said Prof. Sugimura in response to being selected for Honorary Membership. Developing international cooperation and fostering the international exchange of knowledge have also been key aims throughout Prof. Sugimura’s career. He is a former president of the Japanese Radiological Society and was president of the society’s 69th Annual Meeting. Today, he is president of the Asian Oceanian Society of Radiology (AOSR) and the 37th Asian Oceanian Congress of Radiology, which will be held in Kobe in 2014. He hopes the AOSR can emulate the great success of the European Society of Radiology and the Radiological Society of North America. Prof. Sugimura’s dedication has not gone unrecognised and he has received honorary membership of the RSNA and the German Radiological Society as well as Fellowship of the International Society for Magnetic Resonance in Medicine.
Fifth European Conference on Interventional Oncology

April 23-26
Berlin | Germany

A gateway to interventional oncology with leading experts, state-of-the-art research and the latest advances from the field. Join us in Berlin to discover the future of medicine at the world’s largest congress on interventional oncology.

www.ecio.org
As a growing clinical subspecialty, interventional radiology (IR) is seeing an increasing need for data that supports its use and helps define optimal patient care. This goal is being actively pursued by the Cardiovascular and Interventional Radiological Society of Europe (CIRSE), by means of educational events, platforms for exchange and newly launched research initiatives.

**HIGHLIGHTS**

- **Austria launches nationwide breast cancer detection programme**
  The Austrian Roentgen Society (Österreichische Röntgengesellschaft ÖRG) can look back to a highly successful year with various positive developments.

  **The most important initiative with regard to radiology in Austria in the last year** was the planning and launch of The Austrian Breast Cancer Early Detection Programme. At first intended to begin in April 2013, the programme began on January 1, 2014. Prior to January 1, 2014, breast cancer screening in Austria was performed opportunistically, meaning that women could have a screening examination if referred by a general practitioner or gynaecologist. Several pilot projects in various regions of Austria, from 2006 onwards, paved the way for today’s organised population-based breast cancer screening.

  Currently, the Austrian Breast Cancer Early Detection Programme invites all women between the age of 40 and 74 for a mammography examination every 20-24 months. Women between 40-49 and 70-74 can also opt into the programme. Ultrasound mammography screenings are primarily conducted in radiology practices and institutes rather than in hospital departments.

  The Austrian Breast Cancer Early Detection Programme was highly anticipated as various improvements have come with it. Quality-wise, the highest standards have been set with regard to the qualifications of participating radiologists, as well as centres. Participating centres have to meet the following standards: Only digital mammography equipment is allowed and annual quality checks by a medical physicist from the reference centre for technical quality assurance have to be passed. Mammographers have to attend a two-day course and pass a case-based examination to be awarded the certificate of the Austrian Medical Association for Breast Imaging which qualifies them as examiners in the programme. Each radiologist has to report a minimum of 2000 examinations per year and have a minimum of 25 CME hours in the field of breast imaging every 36 months to maintain their qualification.

  Independent double-reading with consensus conferences, if necessary, is the defined standard of the Austrian Breast Cancer Early Detection Programme. In contrast to other breast cancer screening programmes around the world, breast ultrasound is an integral part of the screening and will be conducted by a radiologist in women with breast densitieities in groups three or four according to ACR BI-RADS criteria or a suspicious finding in mammography. The final result together with the BI-RADS management recommendation will be based on mammography and ultrasound findings.

  If a patient is recalled, diagnostic and invasive assessment will be performed in certified assessment centres which follow the requirements as set forth by the European Commission in European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis (Pyett et al. 2009). We hope to be able to report the first results from the Austrian Breast Cancer Early Detection Programme next year in ECR Today. These results are indeed highly awaited across Europe due to the specific outline of our programme with the mandatory performance of breast ultrasound in mammographically dense breasts. Since Tom Kolb’s publication in Radiology in 2002, we know from breast imaging literature that the decrease of mammographic sensitivity in dense breasts can be compensated for by adding breast ultrasound. However, this has never been tested in a national population-based screening programme. Automated breast ultrasound would also be the perfect tool to be applied within the Austrian Breast Cancer Early Detection Programme. A scientific evaluation of this method which showed its strengths during initial studies in the screening population, would also fit almost perfectly within a breast cancer screening programme like the one we have in Austria. So you can expect a lot of news from Austria at ECR 2015.

  More information about the Austrian Roentgen Society can be found at: www.oor.at

**CIRSE**

**Investigating research improving radiology**

IR RESEARCH NETWORK

Chief amongst these is the newly established Research Committees, which is examining areas where the society can strengthen the body of IR evidence. Already an IR Research Network and support service have been launched to address key challenges in realising a research project. The Research Network will allow CIRSE to identify the active research interests of IR centres, and inform them of publicly funded research openings relevant to their clinical practice and patient care. Viable research projects will benefit from the full support of the CIRSE Central Office and European Institute for Biomedical Imaging (EIBI), significantly increasing the chances of research proposals succeeding. **A HUNGER FOR EVIDENCE**

This centralised network, comes at an opportune time – we now find ourselves at an important juncture, where this young discipline’s therapies are reaching a critical mass. Therapies that begin as innovations, often as salvage procedures, have now been successfully in use long enough that accurate mid-term and long-term data can be acquired and meaningfully discussed. This is reflected in much of the educational content of our meetings; with the number of studies presented and debated at CIRSE growing year upon year, our scientific programme has been expanded to include new session types, such as the Evidence Forum. Originally introduced last year to discuss trial updates in peripheral vascular disease, HCC and colorectal metastases, this year’s Forum will evaluate abdominal and thoracic aortic interventions.

**INTERVENTIONAL ONCOLOGY – A NEW RESEARCH FRONTIER**

While the CIRSE Congress has long been recognised as Europe’s premier endovascular meeting, the EICIO meeting is fast becoming the world’s leading platform for scientific exchange in the field of interventional oncology. The European Conference on Interventional Oncology is now in its fifth year, and will also increase its focus on research.

Joint sessions will once again be held with partner organisations ILCA (the International Liver Cancer Association), ESTRO (the European Society for Radiotherapy and Oncology), and WCIO (the World Conference on Interventional Oncology). To reflect the growing need for data that demonstrates clinical efficacy, EICIO 2014 will also welcome the EOBRT, the European Organisation for Research and Treatment of Cancer, whose session will give delegates valuable insights into research methodology.

The robustness of our research will be important for the future: the development of interventional oncology, and crucial if the discipline is to be established as a fourth arm of cancer care alongside surgical, medical and radiation oncology. Through an annual EICIO, CIRSE aims to make a significant contribution, helping interventional radiology position itself in hospital tumour boards and take on clinical responsibility at ECR.**DEMONSTRATING LEADERSHIP IN D**

Alongside this annual event, CIRSE has established the Oncology Alliance Subcommittees, which is tasked with liaising with suitable partner organisations, and the Radiation Oncology Task Force. This newly founded Task Force, chaired by Prof. José Ignacio Bilbao, has recently signed a registry agreement with Sirius to collect data on the safety and efficacy of SIR-Spheres – Thyrin-90 loaded microspheres for the treatment of inoperable liver tumours. The CIRSE Registry for SIR-Spheres Therapy (CIRST) will be governed by a multi-disciplinary steering committee, and plans to begin data acquisition this summer.

Not only will this registry be important in its own right, it is also envisioned that this pilot project, if successful, may set the agenda for other IR technologies.

Interventional radiology is steadily developing into a strong clinical subspecialty – and CIRSE is there to support it every step of the way.

For more information on any of CIRSE’s research endeavours, please contact researchoffice@cirse.org or visit the society’s website www.cirse.org

EICIO 2014 will take place in Berlin, Germany from April 23 to 26: www.eicio.org

**BY MICHAEL FUCHSJÄGER**

Michael Fuchsjaeger is professor of radiology and head of the Department of General Radiology at the Medical University Graz, Austria.
ESR’s EuroSafe Imaging campaign promotes radiation protection in Europe

The mission of EuroSafe Imaging is to support and strengthen medical radiation protection across Europe following a holistic, inclusive approach.

Europe is unique and it has the potential for coordinated radiation safety actions in medical imaging. So what makes Europe unique? In Europe, the EURATOM Directive is binding on European member states and EURATOM has regulated medical radiation protection, including x-rays, since the 1990s. EURATOM stands for European Atomic Energy Community. No other region, or country, has something similar. In the USA, each state has its own regulatory mechanism for x-rays, as federal laws regulate the use of radiotopes in medicine (nuclear radiation) through the Nuclear Regulatory Commission (NRC), but not x-rays. The requirements issued by the International Atomic Energy Agency (IAEA) are not binding on IAEA member states; they are voluntary international standards. In the 1990s, when the Maastricht Treaty was signed, there was a vision to have something like a standardised European x-ray image, such that when the patient travels from one European country to another, there could be validity of the image and thus avoiding repeat imaging. This led to the development of quality criteria for image quality that included patient dose as well. Europe also established diagnostic reference levels (DRLs) that became one of the most important tools for optimisation in patient radiation protection. The European Commission has supported these developments through a variety of projects.

While the Directives need to be incorporated into national regulatory systems by European member states, Europe’s largest radiological society, the European Society of Radiology (ESR), can play an important role as a promoter to support the implementation of the Directives through professional channels. The need for this has never been greater than today with patient radiation exposure rising.

**WHY DO WE NEED EUROSAFE IMAGING?**

Not since x-rays were first used in medical imaging has there been such an interest in radiation protection for patients. The cumulative patient radiation doses have been reaching levels never seen before. There have been some reports of over-exposure, resulting in visible radiation induced skin injuries to patients. There have been reports of overuse of computed tomography (CT), which has become a more patient friendly and clinically valuable imaging technique, with the prospect of it becoming used like a standardised European x-ray image, such that when the patient travels from one European country to another, there could be validity of the image and thus avoiding repeat imaging. This led to the development of quality criteria for image quality that included patient dose as well.

**WHAT WILL EUROSAFE IMAGING DO?**

The ESR has already taken part in a number of EC projects in the area of medical radiation protection. A steering committee for Eurosafe Imaging has just been established. Recently, a consortium led by the ESR was awarded a project by the EC to establish DRLs for paediatric examinations. The ESR has previously pursued a number of projects and actions in cooperation with the European Federation of Organisations for Medical Physics (EUFOMH), European Federation of Radiographer Societies (EFRS), Heads of the European Radiological Protection Commissaries Authorities (HERCA), European Association of Nuclear Medicine (EANM), European Society for Radiology & Oncology (ESTRO), subspecialty radiological societies, such as the Cardiovascular and Interventional Radiological Society of Europe (CIRSE), the European Paediatric Radiology Society (ESPR), the European Society for Urogenital Imaging (ESUI) and the European Society for Gastrointestinal and Abdominal Radiology (EDGAR).

The ESR has also worked with major international organisations like the European Commission, International Atomic Energy Agency (IAEA), World Health Organisation (WHO), United Nations Scientific Commission on the Effects of Atomic Radiation (UNSCEAR) and the International Commission on Radiological Protection (ICRP). Collectively approaching the implementation of radiation protection, motivating countries to translate guidelines into their own languages, creating mechanisms for feedback and providing certification, later on, will meet the ESR’s vision of safe imaging for patients.

**Steps already taken include**

- Training actions with chairs and senior radiologists on orienting them towards radiation protection at the MIR Annual Meeting in October 2013 in Barcelona, Spain
- Establishment of a website on Eurosafe Imaging
- Poster at various countries depicting the current status of safety in imaging made available at the Eurosafeimaging.org website
- Cooperation with Image Gently and Image Wisely from USA is envisaged.

Madan M. Rehani, PhD is Director of Radiation Protection of the European Society of Radiology.
With imaging increasingly in the hands of non-radiologists due to improvements in non-radiating imaging such as ultrasound and MRI and the growing use of push-button methods, technical knowledge alone is no longer a safeguard of professional turf as more clinicians acquire their own machines to carry out imaging procedures.

Besides non-radiologists taking a greater share of imaging, particu-
larly in MRI, competition among radiologists themselves poses a sig-
ificant threat to the profession, according to Prof. Georg Borgantz, vice chair of radiology and head of the abdominal oncologic imaging section at University Hospital of Basle, Switzerland. He is a speaker at today’s Professional Challenges session about opportunities and threats.

Borgantz stresses the need for radiologists to get clinical—“to keep track not only of radiological advances but also of clinical develop-
moments and treatment tissue at the top of the knowledge chain. Otherwise, radiologists risk being replaced byimage-based while the interpretation and reporting of images will be carried out by clinicians, and this division will bring with it the financial impli-
cation of separate billing for the two elements.

Whether for economic reasons or because the clinician gets no added value from the radiological report, such a separation is a real threat, experts agree. The only way to avoid such an eventuality was through collaborative sub-specialist expertise to respond to the needs of clinical colleagues.

“If we don’t get clinical, radiolo-
gists will be lost to image delivery,” said Borgantz in a pre-congress interview with ECR Today. “If our reports don’t add value to the tech-
nical side, we won’t survive.”

The radiological report, therefore, should provide clinically relevant information with quantitative and qualitative data, ideally presented in a graphic, analytical display. When monitoring response to treatment, concrete numbers should prove effect, such as chemotherapy reac-
tion in specific patients. Advice should be useful and succinct. Fur-
thermore, reports should be delivered in a timely fashion, or radiolo-
gists risk damaging their connection with their clinical partners.

“If the surgeon can read a scan immediately or wait 48 hours for the radiology report, what will that surgeons do? Our mission is to know why we image and what the results change for the patient’s therapy and prognosis,” he underlined.

Another means of enhancing the profile of radiology is through radi-
ologists publishing more radiological outcome studies to help prove to clinical colleagues that new methods are worth applying.

“The clinician wants to know what will happen to the patient. Therefore we need to move from publication of new techniques and improvement studies to publishing outcome studies because the former don’t deliver add-on value or interest the clinicians.”

By cooperating with clinical part-
ners in imaging, radiologists can turn the challenge of becoming more clinical into an opportunity, as both parties benefited from each other’s input, he continued.

“Some patients don’t profit from catheter angiography; this conflict has limited resources and long waiting lists. If we share the patients; clear criteria can deter-
mine those that will benefit from invasive diagnosis and those that should undergo less invasive pro-
cedures. For that reason, we do both par-
ties must agree to be on the same knowledge basis,” he said.

Similarly, radiologists needed to include clinicians in research that hinged on clinical applications of new imaging techniques.

Radiologists in small general settings such as private practice or small hospitals are not exempt from the need to subspecialise. The answer lies in subspecialty training before final qualification, through fellowships in dedicated areas for example. Radiologists should also make new connections with other services, and pursue ongoing edu-
cation, according to Borgantz.

“Those in smaller practices should develop knowledge in separate areas from colleagues. In addition, try to make alliances with radiologists in other hospitals or clinics, not just those with the same niche interest, but also those who have different sub-
specialty interests,” he said. “Inter-in-
stitutional radiology is key, both for educational purposes and for the exchange of patients when a case falls outside one’s expertise.”

These days, subspecialisation is mandatory for radiologists, at least in terms of body systems such as thorax, abdomen, brain, heart, and musculoskeletal, and also dis-
esease mechanism such as oncology, emphasised Borgantz.

Elaborating on this theme, even disease mechanisms such as oncology could be further subspecialised, according to co-speaker Prof. Adrian Dixon, emeritus professor of radi-
ology and radiologist at Addenbro-
oke’s Hospital, Cambridge, U.K., and former editor-in-chief of European Radiology.

“In large centres, for example, oncological radiologists will now tend to concentrate on one or more types of cancer; the radiologist with expertise in prostate cancer may not understand the nuances of complex hepatomas and vice versa,” he said.

Failure to ensure that such subspecialisation is supported in training risks the specialty being taken over by others, according to Dixon, who strongly endorses the three-year general training plus two-year sub-specialty training model. Those who are determined to pur-

sue a certain sub-speciality could start with that interest at an earlier stage through focused, individual-
ised training, but non-radiologists should only be radiologically trained in situations where a genuine long-
term partnership was guaranteed.

Overall, subspecialisation will guarantee diagnostic and therapeu-
tic impact, securing the radiologist a central role in the clinical process.

“If only the radiologist’s contri-
butions in reporting or exchange at clinico-radiological meetings helps refine the diagnosis and contrib-
utes to management plans will radiologists continue to enjoy the respect of their clinical colleagues and, thereby the right to lead the discussion,” he noted.

To maintain this crucial relationship with clinical colleagues who are fast gaining imaging skills, subspe-

cialised radiologists must also con-
tinuously monitor imaging develop-
ments. Dixon pointed to some radiologists continuing to perform lumbar spine radiography long after it was realised that MRI provided much more information.

Self-education on an ongoing basis and knowledge of modern referral guidelines such as iRefer and appropriateness criteria will help to ensure that appropriate diag-
nostic pathways are followed. Fur-
thermore, while it is easier for radi-
ologists to defend a mistake if they have a proven audited track record of reporting and procedural skills, they must also perform enough of a certain type of examination such as mammography to maintain their skills, otherwise medicolegal cases may be lost.

Radiologists should be proactive and confident enough to view them-
selves as the front of house of their hospital,” he said. “Second, general radiologists must understand how their leadership over the next couple of decades will determine the future of our specialty.

With imaging increasingly in the hands of non-
radiologists due to improvements in non-radiating imaging such as ultrasound and MRI and the growing use of push-button methods, technical knowledge alone is no longer a safeguard of professional turf as more clinicians acquire their own machines to carry out imaging procedures.

A middle-aged patient with abdominal pain considered on clinical grounds to be due to diverticulitis. Contrast-enhanced CT events active perienteric haemorrhage from an actively leaking abdominal aortic aneurysm. Radiology (ICT in this case) completely alters the diagnostic thinking and the therapeutic strategy, thereby having an impact on the outcome of the patient, who survived aortic surgery (Provided by Prof. Adrian Dixon)
Experts explain how avoid pitfalls in FDG PET/CT imaging at ECR 2014

The demand for PET/CT studies is increasing and so is the need for radiologists to improve their knowledge of this important modality. One of the many areas that require their attention is the occurrence of pitfalls related to the uptake of Fludeoxyglucose (18F), commonly called FDG, the most frequently used tracer in PET/CT imaging.

A dedicated Special Focus session at the ECR will offer useful clues on how to avoid pitfalls and correctly interpret images.

FDG uptake by tissue is also a marker for glucose uptake, which is closely correlated with certain types of tissue metabolism. This means that FDG can show not only disease-related changes but also normal, healthy metabolic changes in the body. ‘Not everything that shins is pathological. To know the difference, you have to train and learn what is really a disease and what is the physiological distribution of metabolism,’ said Professor Katrine Åhlström Riklund, a radiologist specialised in nuclear medicine at Umeå, Sweden, who will moderate the session.

‘To help radiologists, speakers will share advice regarding FDG uptake in oncology, neurology and cardiology.

Most FDG PET/CT studies are currently being carried out to help stage cancer, and plan and follow-up therapy. The combinations of FDG and PET/CT imaging are particularly useful in several different malignancies. Because a tumour cell divides rapidly and has a high rate of metabolism, FDG uptake usually corresponds to disease. Once physicians know the extent of the disease, they can make a more accurate diagnosis and treatment plan, especially in targeted therapies.

But since FDG uptake is a non-specific process, it results in both physiological and pathological tissue uptake. Inflammatory cells, which typically show an increased level of metabolism, could be misinterpreted as cancerous cells, a very common pitfall in cases of inflammatory lymph node. ‘But if you are interested in diagnosing inflammatory or infectious disease, FDG is of great help because it accumulates in inflammatory changes,’ Åhlström Riklund said.

However, some tumours may show a high degree of inflammatory uptake, which are only localised in the tumour; so in inflammation on oncologic diseases may also help to make the correct diagnosis.

Radiologists should also pay attention to uptake in scarred and radiation-treated regions, since these can show increased metabolism. Last but not least, the distribution of FDG in some organs, for instance the brain, can prove challenging because of the uneven degree of uptake in these organs.

FDG PET/CT is also useful in cardiology and neurology but pitfalls are present in cardiology where the combination enables the evaluation of the myocardium’s function, and in neurology where the alliance helps assess brain function in diseases like dementia, Parkinsonism and epilepsy.

Shortcomings may also occur in inflammation, for instance in the evaluation of patients with prolonged fever of unknown origin, infections after joint-replacement surgery, graft infections after endo-vascular and interventional treatments. "FDG is taken up in inflammatory or infectious disease, FDG is of great help because it accumulates in inflammatory changes,” Åhlström Riklund said.

Correct preparation of the patient before the examination may also help to reduce pitfalls. ‘FDG is taken up in metabolic activities, so if you, for instance, talk a lot after your FDG injection, you will have false-positive uptakes in the vocal chords. If you drink coffee or exercise, you will have a lot of uptake in the muscles,’ she said.

The session is aimed at specialists but other radiologists should attend the session to improve their knowledge of PET/CT imaging, she insisted. ‘The PET part in imaging is increasing and it is now necessary to gain more knowledge of both PET and CT imaging, because patients will increasingly undergo PET/CT examinations. The same is true for PET/MR when this modality becomes available here. As radiologists, we have a lot of knowledge of MR, but we also need to know more about PET studies and the disease itself to make a good interpretation. PET/CT imaging is the future, so everybody should come to the session.’

BY KIRIAKOS STRINGARIS

Greek radiologists persevere despite economic crisis

Few other European countries have felt the effects of the financial crisis as much as Greece. The country is taking major steps to modernise and correct the organisational and fiscal mistakes of the past. Although financial indices seem to show the first signs of improvement, there is still a long way to go. This crisis has undeniably affected Greek medicine in general and radiology in particular. The Hellenic Radiological Society, which in 2013 celebrated its 80th year (founded in 1933), is working to identify and overcome the difficulties faced by Greek radiologists in all fields of everyday practice (financial, educational and organisational).

Aiming to rationalise the use of imaging and to minimise patient exposure to ionising radiation, as well as financial costs, the Society published two volumes in the Greek language on the use of guidelines in everyday practice. Diagnostic and Therapeutic Protocols in Radiology (published in February 2012) and Protocols of Oncology Imaging (January 2012) were printed and distributed free of charge to all interested radiologists at four conferences. This set of guidelines has been accepted by the Ministry of Health, the Central Health Council and major insurance companies. It is also available on the www.helrad.org website for download free of charge from the Society’s website’s portal (www.helrad.org), which was launched in September 2012 and recently uploaded to the Athens Medical School website to facilitate educational material exchange. Another syllabus was also produced, by government invitation, regarding the use of contrast agents in all modalities of radiology.

The Hellenic Radiological Society has been working closely along with state organisations, such as the national organisation for health services, on a project for regulations affecting imaging departments. The project was considered unsuitable for young radiologists running small private practices who are threatened by huge corporations, and the project was finally abolished. After long-ago action, good news was also received as the Greek government formally recognised the subspecialty of interventional radiology. Similar plans have been made for neuroradiology and paediatric radiology which are constantly under threat from non-radiologists. Success was also achieved in the eradication of the pedagogical criteria restrictions, formerly placed on small private practices (one to two radiologists) consisting of basic modalities (x-ray, ultrasound, mammography and bone-density scanning), which impeded young colleagues starting their career.

Despite the financial crisis, the scientific standards of Greek radiology have remained high. Numerous papers from Greek imaging departments are constantly present in PubMed. The 21st Pan-Hellenic Congress of radiology was held in 2013, at a very low cost, while planning for the 23rd Congress in autumn 2014 has already begun. Three free of charge training meetings were held in Athens in 2013. These were the second European Society of Neuroradiology Congress, the ESR’s AGES took place in Athens in 2013, while the ESR/ASOR (Australasian Society of Radiologists) held a joint meeting in September 2014. ESOR Scholars and Fellows included six Greek participants of scholarship programmes, and there was one Greek training course. The Society has been collaborating closely with the European Commission Workgroup for Referral Guidelines, as well as the RSNA/ESR Structured Reporting Initiative, on translating reports into Greek.

However, the financial situation has made it more difficult for colleagues to attend scientific meetings in Greece and abroad, and an understandable reduction in the number of Greek radiologists attending the ECR, from 395 in 2009 (6th country in the number of radiologists to attend the ECR) to 259 in 2012 (25th country), has been observed. In 2013, radiologists attended the 2013 International Day of Radiology by offering, after a dose 620 € each to four trainee radiologists to help them attend ECR 2014, in order to use the purchase of new equipment.

Even though Greece is not out of the woods yet, positive thinking, hard work and constant action are helping to bring the recovery a little closer in everyday life, medicine and radiology.

Kiriaikos Stringaris is President of the Hellenic Radiological Society
Hybrid imaging is gaining acceptance as opportunities using combinations of modalities emerge and promise to optimise cardiac imaging, according to expert speakers in today’s session called ‘Hybrid cardiovascular imaging: where should we go?’

Not only is SPECT a widely available and very effective method for perfusion imaging, but also functional imaging with SPECT or PET is necessary to exclude coronary artery disease (CAD) as the aetiological predictive value of CT for relevant stenoses is very limited, noted Prof. Marcel Hacker, an expert in cardiac imaging from the Medical University of Vienna. In his talk today entitled ‘SPECT/CT: is it just PET/CT’s little brother?’, he plans to discuss the pros and cons of the two combined modes of imaging.

Appropriate indication and therapy of CAD frequently require information about both the morphological and functional status of the coronary artery tree. With this in mind, combined imaging consisting of invasive coronary angiography (ICA) plus SPECT myocardial perfusion imaging (MPI) is being used for the clinical diagnosis of patients with stable angina. However, knowledge regarding the presence and extent of subclinical coronary atherosclerotic disease in patients who do not have ischaemia by MPI can be of importance in patient management, and for this reason, ICA might be preferable to SPECT for providing the necessary diagnostic information and prognosis.

During his presentation, Hacker will explain why this is the case. His focus will mainly be on different strategies to render ICA functional and perfusion imaging with different CT techniques on SPECT CT hybrid scanners, but also by the use of separate SPECT and CT scanners. He will also discuss the advantages of PET/CT.

‘In general, ICA is an invasive method with a low but distinct rate of complications. For the purpose of coronary diagnosis, ICA is two dimensional and with it, pathologies can only be virtually combined with perfusion abnormalities in SPECT, so that the allocation is hampered particularly in patients with multi-vessel or multi- stenotic disease,’ he stated.

As an alternative, PET/CT as compared to SPECT/CT provides higher spatial resolution and absolute quantification of perfusion that is higher accuracy can be achieved. Hacker pointed out. Otherwise, with SPECT strategies, more physiological e.g., metabolic or metabolic stress tests can be performed and perfusion tracers are more widely available.

However, he highlighted that the combination of non-invasive CT angiography with SPECT was advantageous as both modalities provided 3-dimensional images that can be fused. “This results in improved allocation from vessels and stenoses to respective ischaemia and, thus, reduces the number of ambiguous findings,” he said, adding that wall irregularity as well as non-calcified plaque tissue were detectable from CT, and improved SPECT risk stratification. “This kind of image fusion can be generated from both stand alone and hybrid scanners.”

But Hacker emphasised that the haemodynamic relevance of coronary artery lesions is a major condition to decide whether an intervention therapy should be performed or not. “Identifying morphologically significant stenoses in CT coronary angiography does not mean that these stenoses are haemodynamically significant or that these stenoses required interventional therapy,” he commented. Functional imaging is mandatory in patients with these kinds of stenoses, and in addition, SPECT provides useful information for both risk stratification and patient management for patients with the aforementioned increased calcium scores.”

SPECT and PET analysis of perfusion and functional imaging and existing limitations of published registry data and prognostic values for patients with stenoses or even occlusion can only be virtually combined with SPECT accuracy and risk stratification.” However, he highlighted that the PET/CT might be preferable to SPECT for providing the necessary diagnostic information and prognosis.

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Nipple problems and automated breast ultrasound come under intense scrutiny

Every general radiologist can sometimes be involved in a potentially embarrassing situation when a colleague demands help in solving a problem about the nipple/areolar area of a patient whom he or she is concerned about. What results can be expected from an ultrasound? Is it indicated or not? A presentation at Thursday’s breast ultrasound course aims to answer those questions and provide an update on developments within breast ultrasound.

In an interview with ECR Today, Dr. Michael Fuchsjäger, an associate professor of radiology and director of breast imaging at the Breast Unit at University Hospital Vall d’Hebron in Barcelona, Spain, admits it is difficult to find much about the nipple/areolar region in any textbook or in the scientific literature.

“Breast ultrasound is the more simple and accessible technique to image this area. It’s important to remember that there are much more frequent than any other (reflecting, nonreflecting, or even premalignant) findings. Ultrasound becomes useful for diagnosis as well as to control the evolution. Another reason ultrasound is the method of choice is that it’s cheaper than MRI,” he continued. “The main advantage of ultrasound for nipple/areolar region is the chance to do a physical examination combined with the results of the technique in a single session,” he added.

The practice, general radiologists in many parts of Europe are dealing with the breast ultrasound. Ultrasound is the more simple and accessible technique to image this area. It’s important to remember that there are much more frequent than any other (reflecting, nonreflecting, or even premalignant) findings. Ultrasound becomes useful for diagnosis as well as to control the evolution. Another reason ultrasound is the method of choice is that it’s cheaper than MRI.

“The special tricks and facts to consider about the technique and a thorough knowledge of the pathology of nipple and areola will help the radiologist in achieving a high performance in the approach to a clear diagnosis in this part of the breast.”

It’s very important that radiologists are not afraid to check the nipple and areola under ultrasound in patients with problems in this area. It’s necessary to convince the clinicians that ultrasound will add many facts to refine the diagnosis and treatment for their patients, he noted.

In terms of the future, the increasing number of international procedures, mainly percutaneous excision of papillomas and other benign subareolar lesions, reflects the trend to use ultrasound intervention to reduce open surgery for these superficial lesions.

UPDATE ON AUTOMATED BREAST ULTRASOUND

In the hospital and in private practice, general radiologists in many parts of Europe are dealing with the entire array of imaging modalities in these situations, according to Prof. Dr. Michael Fuchsjäger, head of the department of general radiology at Medical University Graz in Austria. Breast imaging is an integral part of generalist’s work, and many of them are working in image- guided procedures. During his presentation, ECR delegates will get first-hand information on a new development in breast ultrasound, which will be mainly used to complement screening mammography: automated breast ultrasound.

“This technology is based on computer generation of a 3D imaging dataset obtained from many parallel 2D images. It offers a different approach with a variety of benefits,” he said. Images are obtained by the scionographer in a standardised fashion, whole breast datasets can be reviewed at any time after the examination, which reduces operator dependency, and image fusion with MRI, for instance, is possible. Automated breast ultrasound is indicated in screening patients in whom incidental cancers would be expected, according to Fuchsjäger. Scientific studies showed automated breast ultrasound’s highest value is for high-risk screening populations, i.e. patients younger than 50, with dense breast tissue, a personal history of breast cancer, or a genetic risk.

“Automated breast ultrasound would fit perfectly as a complement to screening mammography in women with heterogeneous dense or very dense breast tissue (BI-RADS category 3 or 4),” he stated. “It is not intended to replace hand-held breast ultrasound, which is the method of choice for evaluation for suspicious lesions, preoperative staging, axillary lymph node assessment, as well as ultrasound-guided breast interventions.”

While automated breast ultrasound won’t replace hand-held breast ultrasound, there are some significant differences. Some of hand-held ultrasound’s strengths are that it’s widely available, relatively inexpensive, and well tolerated by women. Also, any interventions can be readily performed, irrespective biopsies equipment is cheaper than for other imaging modalities.

“With hand-held ultrasound you are close to your patients – that is so important in breast imaging, where clinical examination and clinical history are highly relevant for imaging diagnoses,” Fuchsjäger explained. “After the area of the ‘invisible radiologist’ (see Glazer G, Radiology 2011;260:18-22), it is important to understand that radiology is a ‘clinical’ specialty in medicine. Breast ultrasound, whether hand-held or automated, brings us closer to our patients, helping us in making a correct diagnosis consistently.”

However, hand-held ultrasound is a highly operator and experience dependent modality. Real-time adjustments (gain, focal zones, dynamic range, pressure, etc.) are necessary for good results, and abnormalities have to be recognised at examination, otherwise they are missed. With automated breast ultrasound, on the other hand, there are standardised views (like in mammography) for better reproducibility. Acquisition is separated from interpretation, and second reading, like with screening mammography, is an option, he continued.

“It saves a physician’s time, as examination can be performed by technologists,” he said. “Furthermore, first trials report a higher cancer detection rate for automated breast ultrasound and mammography versus mammography alone.”

Limitations include lower ultrasound frequency than for hand-held devices, no Doppler analysis or elastography imaging, difficulties in scanning the axillary region, and the relatively large amount of data (7-15 GB per examination). Artefacts can be an issue due to the bigger transducer (9 cm).

When asked what ECR delegates will get out of his lecture, Fuchsjäger wrote: “Attendees will understand the physics of hand-held and whole breast ultrasound, they will become familiar with the practical technique of hand-held and whole breast ultrasound, and they will be able to appreciate the clinical applications of hand-held and whole breast ultrasound including automated screening.”

A 78-year-old woman with invasive ductal cancer of the right breast. Automated breast ultrasound shows extremely hypodense, irregular, spiculated mass lesion with dorsal shadowing (BI-RADS 5). Notice coronal view on the bottom left with retraction features of invasive cancer not seen in transversal or sagittal views. (Provided by Dr. Maria Bernathova, Medical University of Vienna)
Mobile devices and tablets start to come of age for remote reading of images

The technology and performance of tablets and mobile devices are evolving rapidly to provide attractive alternatives and extensions to traditional workstations and laptop computers.

...workstations and laptop computers. Reactive alternatives and extensions to traditional mobile devices are evolving rapidly to provide a version of the software for viewing application,” he explained.

...dered images processed by the desktop application to download and store... processed by the desktop version of the software.

...It can however easily link to the desktop version of the software...

...The tablet app is a simplified version of the software for viewing images and manipulating them but does not provide all the processing and 3D rendering and raises questions about the desktop version of the software. It can however easily link to the desktop application and stores either native DICOM images or rendered images processed by the desktop application,” he explained.

...Although the tablet application can directly query and download images from the PACS through standard secure DICOM transfer protocol, the hospitals IT and PACS architecture does not yet allow such data gathering through the hospitals secure wireless network. The tablet therefore needs to link to a workstation to access the image data...

..."This current setting defines the goal of using the mobile devices as direct remote access to the image data, but it allows physicians, surgeons and even radiologists to carry images on their mobile device and use them in areas where they have limited access to workstations such as clinical rounds, operating rooms and some consultation rooms," noted Ratib, adding that sufficient technical solutions exist to provide proper security when using these devices to handle confidential data.

...Ratib’s department chose to develop a dedicated companion application to the Open-Source Osirix software... mobile device and use them in areas where they have limited access to workstations such as clinical rounds, operating rooms and some consultation rooms, he explained.

...Today’s Refresher Course aims to provide radiologists with a comprehensive review of how mobile devices can be used to access medical images and patient records, and to familiarise them with different technical settings and designs of new mobile applications currently available on the market. Speakers also plan to explore the rapid adoption of such devices outside of radiology by referring physicians, surgeons and other practitioners during clinical rounds and even during surgical interventions, and the potential of such developments to improve radiologists’ relationships with clinical colleagues and patients.

...Questions regarding the quality and performance of tablets and mobile devices in comparison with existing workstations solutions will be answered by telecommunications engineer, Jospeh Fernandez-Bayo, PhD, head of the digital medical imaging department at software company UDIAT, Sabadell, Spain.

..."Tablets are probably here to stay," he said. "In Spain, tablets are beginning to be used in the healthcare sector. A recent survey found that 34% of professionals would be willing to use tablets in patient rounds, with some preferring traditional methods. However economic restrictions and budget cutbacks have probably delayed their implementation, especially in the public sector.”

...Demonstrating how far tablets are from matching the screen characteristics of a reading room diagnostic workstation display, Fernandez-Bayo will compare resolution, brightness, contrast, colour and grayscale accuracy. In certain parameters, tablets are close and sometimes superior to diagnostic displays, he claims.

..."Tablets generally have more spatial resolution than diagnostic displays because they are able to show more pixels per inch and in this sense, are even better than monitors. Brightness is probably another important parameter where some tablets can outperform diagnostic displays,” he explained.

...In February 2011, the U.S. Food and Drug Administration approved the first mobile application for limited diagnostic viewing but its use is restricted to situations in which no diagnostic reading room facility with workstations is available. Even in these cases, certain precautions are necessary such as cleaning off the fingerprints that normally cover the screen and going to the dimmest part of the room, according to Fernandez-Bayo.

..."Most importantly, the display should be DICOM-calibrated like the displays used in primary diagnostic workstations in the reading room. Nowadays there are tools available to calibrate the tablet display to be DICOM conformant which for diagnostic reading is a better option than using a conventional laptop without calibration,” he pointed out.

...Tablets can improve image and report distribution to the referring clinicians, and in ward rounds can help in communicating with patients about findings. However, the images they display should look the same as those available in the reading room, and their quality should be similar too, according to Fernandez-Bayo. To ensure this, clinicians need to know how to create the appropriate viewing conditions with these devices and develop good habits like turning the auto-brightness off so as to always use the maximum allowed brightness and avoiding direct reflections on the screen from windows or lamps.
Radiologists must be thorough when investigating malignant primary bone tumours

Malignant primary bone tumours like osteosarcoma and Ewing’s sarcoma are very serious diseases mainly affecting children and teenagers. General radiologists are not likely to see these patients every day at their practice, but when they do, they must know what they have to do to optimise patient care and improve outcomes. Experts will give instructions and share useful advice during the dedicated Multidisciplinary Session today at the ECR.

Malignant primary bone tumours are very rare and affect less than five or six patients per million a year, according to Koenraad Verstraete, professor of radiology and chair of the radiology department at Ghent University Hospital, Belgium. The average radiologist may only seldom encounter this disease, but he or she is often the first one to discover it. The imaging strategy chosen by the radiologist will, therefore, considerably influence patient management, said Verstraete, who will chair the session.

“You can discover it by accident, for instance when examining patients with pain in the knee or a limb. It is the burden of the radiologist who makes the first x-ray or first MRI to interpret the image correctly and refer the patient to the appropriate centre. It can also occur that you will be responsible for local follow-up of the patient after surgery,” said Verstraete, who will speak about osteosarcoma and Ewing sarcoma, two major malignant bone tumours usually found in children. He will also briefly present attendees with images of other malignant bone tumours, such as chondrosarcoma and adamantinoma, to complete his presentation.

The first task of the radiologist is to make the right diagnosis, usually with conventional x-ray. Ewing’s sarcoma may look like an infection, Verstraete said. The session will teach attendees how to differentiate a tumour from an infection by searching for fat cells in the bone marrow – which are typically present in the case of an infection and absent in the case of a tumour.

The second task is to perform local staging of the tumour, to let the surgeon know where the tumour is invading the joint, muscle, nerves or vessels. MRI is the modality of choice, and radiologists should not only image the knee, but also the whole upper or lower leg for skip lesions, according to Verstraete.

“Local staging is often done by general radiologist, but they often forget to image the whole femur or tibia, because these tumours mostly occur in the knee. When a patient is referred to a tumour centre with an MRI of the knee, surgeons want to know if, for instance, the whole femur is also invaded and how far. So an important message to radiologists is to please always image the whole bone,” he explained.

Radiologists must also present the local orthopaedic surgeon from performing a biopsy at this stage. “This should be done in the referral centre by the oncologic surgeon who will perform the surgery. When the local orthopaedic surgeon does the biopsy, this can really go the wrong way and end with amputation. The radiologist should tell the local surgeon not to do anything and send the patient directly to referal centre,” he insisted.

The third task for radiologists is to determine the site of biopsy so they can show the oncologic surgeon where the most active part of the tumour is and which route they should take. At this stage, the patient is already in a specialised tumour centre where oncologists, pathologists, radiologists and surgeons are in charge of their management. Dynamic contrast-enhanced MRI is helpful for finding the best site of biopsy by looking at the vascularity of the tumour and leading the surgeon towards its most malignant part.

After local staging, radiologists must also do distant staging, usually with a CT scan of the lungs, a common site of metastases with these tumours.

Based on the results of the biopsy and staging, the medical team will decide what kind of therapy is needed. In the case of neoadjuvant chemotherapy, the patient will receive chemotherapy for three months prior to surgery. “The aim of the procedure is to kill the tumour and invisible micro-metastases, and make it shrink as much as possible before surgery,” he said. In this time, doctors also have the time to prepare a prosthesis which will serve to replace the knee, he said.

Assessment of treatment response before surgery is crucial and radiologists must perform another imaging study after three months. Once again, they will use dynamic contrast-enhanced MRI to see whether the tumour, and especially tumour vascularity, has decreased since the first MRI scan was carried out during local staging. The response rate is divided in two groups: the group with good response and the one with poor response. The cure rate can be as high as 70 to 75% for the group with good response and as low as 5 to 10% for the group with poor response.

Chemotherapy continues for about one year after surgery, and imaging also plays a key role in patient follow-up, detecting potential recurrences and complications after prostate placement or amputation. The most widely used imaging modalities to follow up patients with prostheses are x-ray and ultrasound, because prostheses can lead to metal artifacts in MRI. Radiologists also perform lung CT scans to see if there are any metastases. The usual frequency for follow-up is every three months after the first two years of surgery and then every six months from the third to the fifth year.

Close cooperation with all the other physicians involved is key to patient management, “in all decisions making, we always use the multidisciplinary approach. We all sit together at the time of diagnosis, and before and after surgery. Multidisciplinary approach determines the whole diagnostic and therapeutic sequence,” said Verstraete, whose presentation will be followed by talks by the oncologist Dr. Carliux, D’Hooge and orthopaedic surgeon Dr. Sys, who will chair the session.

The session will end with the case presentation of a patient who Verstraete and his colleagues treated for four years and who should serve as an example of teamwork by detailing the tasks of every physician involved in the case.
Knowledge of anatomy and disease pattern can minimise errors in head and neck

A detailed understanding of the complex anatomy of the head and neck—plus an appreciation of individual variation, knowledge of clinical information and patterns of disease spread—should help to minimise misreporting of images, say experts speaking in today’s session on ‘Head and neck emergency: for the general radiologist or the patient?’

Specifically, Dr. Davide Farina, a radiologist with a special interest in head and neck at the University of Brescia, Italy, will address where medical history and previous images can help to rule out a tumour. In his talk, he will explain how the interpretation of images starts climbing a three-step stair: collection of clinical information, interpretation of the site of origin and assessment of the pattern of disease spread. “Once on top of the first stair, we are generally restricted to a small number,” he noted.

But treatment-induced anatomical changes, inflammation, complications and relapse can all confound interpretation of head and neck images, making the additional clinical and disease information essential for this region of the body.

“Both the complex anatomy involved and the relatively small number of head and neck examinations performed in most peripheral hospitals conspire to make head and neck imaging quite challenging for the majority of general radiologists,” said Farina.

In many cases, such imaging is prone to confusions and misinterpretation. However, he remarked that reporting head and neck studies is easy if radiologists have a good grasp of the regional anatomy. Actually, anatomy is the key to interpretation of images; to produce consistent differential diagnoses, and to understand the pattern of spread of many diseases,” he pointed out.

Farina also stressed that clinical history was crucial, including selection of the imaging technique, the scanning protocol, and the modality of contrast administration. “Image interpretations largely influenced by the clinical setting. As a basic example, in the paediatric population, a diagnosis should be obtained in a less invasive way because of patient age and because the most common head-neck lesions in this subpopulation are uncommon or infectious,” he said.

Malignant neoplasms provide an example of the importance of obtaining the correct clinical information to aid accurate interpretation of images. “In these cases, surgery and chemo-radiation not only grossly change the anatomy but also induce inflammation, which is expected to progressively decrease in intensity over time,” Farina pointed out.

Another speaker at the same session, Prof. Can Zafer Karaman, from the Department of Radiology, Adnan Menderes University, Aydin, Turkey, explained that imaging of head and neck is a field of radiology that many radiologists find challenging, especially with respect to sophisticated MRI or CT studies.

“This reluctance may be a consequence of the complex anatomy physiology and function of the area,” he remarked. “This part of the body is not only a crossroad between the head and the body but is crucial as a gateway for respiration, digestion, and the body’s way for respiration, digestion, and the body, but is crucial as a gate-’”, he noted.

Paranasal sinuses and air cells of the temporal bone can be sources of pseudolesions, especially when they are complicated, i.e., purulent sinusitis or the sphenoid sinus. Furthermore, misinterpretation of the petrous apex can be observed in one-third of patients. With reference to the technical issues related to PET and PET/CT, Karaman cautioned that these modalities carried their own risks for pitfalls. Normal structures such as parotid and submandibular glands, plus lymphoid tissue of the adenoids and Waldeyer’s ring, may confound interpretation and result in false-positive findings on PET/CT. Similarly, normal FDG uptake in muscles that are contracting or tensed during the uptake phase (e.g., in anxious or talkative patients) may lead to false-positive findings.

Karaman considers that image interpretation starts with the evaluation of the data obtained from the patient, including clinical history and relevant laboratory findings. “Assessment of the quality of the technique as the second step may ease the diagnostic workup,” he said. “Radiologists should be alert and question any atypical and unusual findings to avoid pseudolesions.”

In a panel discussion, “Confidence in the use of tablets in our clinical practice”, Prof. Can Zafer Karaman, Adnan Menderes University, Aydin, Turkey, explained that imaging of head and neck is a field of radiology that many radiologists find challenging, especially with respect to sophisticated MRI or CT studies.

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The role of ethics in medicine is at least as old as the Hippocratic Oath, taken by healthcare professionals to swear honesty and integrity in their practice. This oath was renewed in the Declaration of Geneva (1948) following World War II and again in 1964 with the Declaration of Helsinki, which mainly concerns human research ethics.

Since the 1950s, the industry’s influence on healthcare has increased tremendously due in part to the fact that medicine itself has become increasingly costly with the advent of advanced technology and machinery, as well as ever-expanding research. The pharmaceutical industry played an especially prominent role in supporting research and educational efforts, but this came under extreme scrutiny after several major scandals in North America during the 1980s.

In an effort to stem the tide of negative press and public outrage, the industry has begun to adopt a strategy of self-regulation as a means of improving their reputation but also as a way of preventing the government from stepping in and dictating the development of the healthcare industry too strongly.

Generally speaking, academic and charitable support from the industry supports academic and medical research, as well as many specialties such as pharmacology, cardiology and radiology. With government funding on the decrease in most Western countries, financial support from the industry is vital to ensuring a continuously high level of research and education. Past scandals have shed a more critical light on the relationship some healthcare professionals have with the industry, leading to increased calls for more transparency in the relationship between commercial companies and individuals, as well as professional bodies and academic institutions.

Over the past decade, the relationship between medicine and the industry, including pharmaceutical and medical device companies, has once again come under intense interest and scrutiny. This has been fueled by the fear that the industry’s influence may compromise clinical decision-making, thus potentially affecting healthcare delivery.

The result has been on the one hand that the industry has established its own codes of conduct and, on the other, that legislative bodies have passed laws to improve the transparency of relations between healthcare professionals and the industry. The two most prominent laws at present are the Physician Payment Sunshine Act in the US and the Bertrand Law in France. Both basically say that even the smallest benefits or compensation, whether monetary or otherwise, which healthcare professionals receive from the industry must be made public, usually via the internet.

COCIR, the association of the European radiological, electromedical and healthcare IT industry is a pioneer in this regard as it has defined a set of standards for its members.

### HISTORY OF THE COCIR CODE OF CONDUCT

For medical technology companies, interacting with healthcare professionals is critical to ensuring device innovation and patient safety. As a European association comprising global companies, COCIR decided to develop a unique code of conduct, which was first published in 2009, in order to ensure that these interactions are conducted in an ethical and professional manner by the industry that COCIR represents.

Since 2009, continuing efforts have been made to continuously expand the Code and to further develop COCIR’s members global companies seeking compliance and harmonisation in international markets. This Code of Conduct sets out the benefits of working in an ethical, transparent and socially-responsible business environment. Apart from the Code of Conduct, other key elements have been developed by COCIR such as Questions & Answers documents and Do’s and Don’ts to assist companies in understanding and implementing the Code. The Code was made available in several national languages in order to make it accessible to healthcare professionals in Europe and beyond.

The corporate lawyers from COCIR’s member companies meet regularly in the COCIR Code of Conduct Committee, responsible for refining the approach, developing key elements and allowing its companies to work in an ethical and collaborative manner with healthcare professionals.

COCIR is committed to advancing ethical behavior within the medical technology industry. We hope that the ethical standards set out in the COCIR Code of Conduct will help strengthen compliance and business integrity. This is the way forward if the medical technology industry is to keep on delivering modern, safe and effective medical technology without compromising the safety of patients and users. For the medical technology industry, collaboration with healthcare professionals is indispensable. Healthcare professionals are not only the main users of new technology but they also play an instrumental role in their successful deployment. In fact, healthcare professionals often bring ideas to the table that lead to the development of new devices and inspire continuous incremental improvements to existing technology. Close collaboration and partnership between healthcare professionals and the industry will only be successful if both parties respect high ethical standards.

### Joint Session of the ESR and COCIR

**Thursday, 16:00–17:30, Press Room**

**How does integrity affect our daily lives? A joint radiologist/industry initiative**

**Chairpersons:** E.J. Adam; London/UK

**K. Haydon; Four Elms/UK**

A regulator’s perspective

A representative of the European Commission (t.b.a.)

Panel discussion

R. Lena; Buc/FR

C.D. Claussen, Tübingen/DE

G.P. Krestin, Rotterdam/NL

**Contents and intention of the Code of Conduct**

The following four fundamental principles form the foundation of the Code:

- **The SEPARATION Principle**: a clear separation should exist between any advantages or benefits granted by COCIR members to healthcare professionals and the decision-making process resulting in the procurement of members’ products or services. The purpose of this principle is to ensure that such advantages or benefits do not influence business transactions between COCIR members and healthcare professionals.

- **The TRANSPARENCY Principle**: advantages or benefits awarded to healthcare professionals should be disclosed to the institution’s administration or management.

- **The PROPORTIONALITY Principle**: any consideration given to a healthcare professional in exchange for a service or other performance shall not exceed normal market value.

- **The DOCUMENTATION Principle**: the granting of any advantages or benefits to healthcare professionals by COCIR members should be documented.
Ultrasound developers ride the crest of a technological wave

It may be an extremely mature modality, but ultrasound remains a fast-growing sector of the imaging market. Global annual equipment sales are up by about 5% overall, and at more than double that rate in the rapidly expanding Chinese healthcare system, according to industry analysts. Vendors are locked in fierce competition, both to meet the existing demand and to generate even greater sales by developing new applications for this cost-effective and versatile modality. Some of the fruits of these efforts will be on display in the commercial exhibition at ECR 2014.

Cardiology exams are the main focus of the system on show in the exhibition hall, while future versions will include anatomical data on other organs and structures. EPIQ has also been designed to make sonographers’ working lives more comfortable and productive. “These people often have to do their job in a cramped, dark environment with the scanner generating a lot of heat and with the cooling fans producing a lot of noise. EPIQ uses less power than other systems and is virtually silent when running so that will create more pleasant conditions for both the operator and the patient,” Porter explained. “The new tablet-style interface also reduces the number of steps needed to create the images by about 15% and we expect exam times to be reduced by between 30 and 50%.”

Siemens is also convinced that its latest ultrasound offering brings considerable benefits in terms of both diagnostic efficiency and improved workflow. Of the new HELX Evolution addition to its family of elastography systems, Jeffrey Bundy, chief executive of the company’s healthcare ultrasound business, said that this system is certainly no product of slow incremental improvement. “We evaluated the entire system from his belief in the effectiveness of new imaging technology called nSight, in combination with a feature named Anatomical Intelligence (AI). nSight is an innovative beam-forming technology that, with an enhanced parallel processing capacity offers substantial improvements in image performance, particularly in these patients in which previous ultrasound systems will often produce inconclusive results,” according to Philips. EPIQ’s new transducers can increase penetration by up to 70% with more uniform imaging and have been tested successfully in patients with a body mass index (BMI) of up to 40. That makes it less likely that these larger patients will have to be referred for further MR and CT examinations.

Meanwhile, AI has been created from a large database of anatomical structure models with adaptive system technology that reportedly offers advanced organ modelling, image slicing, and proven quantification features. This makes examinations easier to perform, more reproducible, and capable of delivering new levels of clinical information, the company stated.

PHILIPS HEALTHCARE hopes it will have a substantial number of visits to its stand by radiologists wanting to examine the new EPIQ premium ultrasound system. “We truly believe that this represents a quantum leap in the diagnostic performance of ultrasound as it will allow medical staff to see and do things at a level that has not been possible before,” says Duncan Porter, head of imaging systems field marketing.

That confident prediction stems from his belief in the effectiveness of new imaging technology called nSight, in combination with a feature named Anatomical Intelligence (AI). nSight is an innovative beam-forming technology that, with an enhanced parallel processing capacity offers substantial improvements in image performance, particularly in these patients in which previous ultrasound systems will often produce inconclusive results, according to Philips. EPIQ’s new transducers can increase penetration by up to 70% with more uniform imaging and have been tested successfully in patients with a body mass index (BMI) of up to 40. That makes it less likely that these larger patients will have to be referred for further MR and CT examinations.

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Breast ultrasound – just a storm in a D cup?

Breast cancer is the second most common cancer globally, surpassed only by lung cancer. Early detection significantly increases the chances of survival and results in less complex treatment. Although methods such as mammography and MRI have traditionally been used, they have their limitations. New developments in ultrasound technology offer numerous benefits over traditional imaging techniques, yet the potential of this market has yet to be realised.

However, recent product launches and focus on breast imaging suggest ultrasound has real promise for moving from a supplementary breast imaging technique to a standard of care, challenging the long-standing dominance of x-ray mammography.

MAMMOGRAPHY: THE INCUMBENT
At the most commonly used diagnostic technique for breast imaging, global unit shipments of mammography x-ray equipment dwindled those of ultrasound. The global market for ultrasound systems used for breast applications is currently a tenth the size of the mature mammography market in terms of unit shipments. Growth in mammography is also slow at 3% annually for unit shipments, with the majority of leading healthcare markets already saturated. Admittedly the approval and increased use of digital tomosynthesis has breathed new life into mammography – yet concerns surrounding patient comfort, dose awareness and declining reimbursements have yet to be addressed.

Increased focus and awareness on early detection of breast cancer has also highlighted mammography’s limitations. Most notable is the limited diagnosis possible with dense breast tissue. Combined with concerns surrounding radiation exposure, focus has shifted to other imaging techniques, in particular ultrasound, as the successor to mammography for breast screening.

MRI: THE SPECIALIST
Breast-specific MRI use has also been limited. The current financial climate has been by far the biggest restriction to increased use, further questioning the long-term viability of MRI as a screening tool. With systems upwards of $500K and declining reimbursement even low-cost dedicated breast MRI systems may be too pricey for most providers, especially small clinics and hospitals. From a purely diagnostic view, breast MRI certainly provides the best clarity and diagnostic confidence, especially when paired with contrast agents. However, the high cost, limited availability and continued challenges impacting advanced imaging will certainly detract widespread use of MRI as a high-volume screening tool. MRI certainly has benefits for breast imaging, but it will be reserved for the most complex cases in the vast majority of hospitals and clinics.

Breast Ultrasound: The Future?
Forecast to experience twice as much growth as mammography in the next three years, breast ultrasound systems are expected to gain significant share of the total breast imaging installed base. Such growth has been witnessed by the steady increase of breast-specific ultrasound systems being released, combined with regulatory approval for Automated Breast Ultrasound (ABUS) as a screening tool. Breast ultrasound can boast significant benefits in comparison to other modalities: flexibility, relative low-cost, no radiation and increased patient comfort all point to a modality that is better suited to widespread breast imaging. Furthermore, with increased research and development, standardised ultrasound elastography could be incorporated to provide extra diagnostic confidence.

This realisation is also apparent in the new solutions being brought to the market by vendors. Siemens and GE Healthcare (through the acquisition of IT, HIS) have been predominantly focused towards improved reimbursement for screening, ultrasound will remain a fringe secondary option. In addition, user perception of breast ultrasound will need to change. This can only be achieved through hard evidence. Demonstrating the long-term cost savings of ultrasound screening should be relatively straightforward. Demonstrating the clinical benefits will be much harder; considering the cost and lengthy debate taken to convince the majority digital tomosynthesis is clinically beneficial.

Virtual Touch IQ is the latest acoustic radiation force impulse (ARFI) based feature from Siemens and combines the benefits of imaging together with quantification. The velocity of the shear waves across a user-defined region of interest can be displayed as a colour-coded velocity map and allows immediate subjective assessment of stiffness according to the manufacturer. Multiple measurements can be taken at any point within the region of interest.

CONTRASTING FORECAST OUTLOOK: BREAST ULTRASOUND VS. MAGNOMGRAPHY

Unit Shipment Growth (%)

ICU TODAY | THURSDAY, MARCH 6, 2014

BY NICOLA GOATMAN

Breast ultrasound vs. mammography

Contrasting Forecast Outlook: Breast Ultrasound vs. Mammography Unit Shipment Growth (%)
Enterprises (COSME), as well as the European Institute of Innovation and the Competitiveness of Enterprises and Small and Medium-Sized Enterprises (COSME), as well as the European Institute of Innovation and Technology (EIT).

Horizon 2020 will run from 2014–2020, and it is a specific funding instrument for SMEs, and will operate as an open call with three cut-off dates per year. Information about the open calls and more details about applying for Horizon 2020 projects are available on the European Commission’s website ec.europa.eu/research.

HOW EIBIR CAN HELP

Navigating the rules and regulations of Horizon 2020 while developing an innovative, first-rate research project with partners from across Europe can be difficult, and even more so when deadlines are looming. The European Institute of Biomedical Imaging Research (EIBIR) removes the administrative and organizational burden of applying for European Commission funding, allowing scientists to focus on the innovative and technical aspects of their research idea.

EIBIR has aligned its core, research-related services to achieve successful results. EIBIR’s expert team is able to offer their professional guidance and support in a wide variety of areas, from first-stage proposal preparation to project financial management.

For example, during proposal preparation, EIBIR offers:

- Expert evaluation of your project idea by the EIBIR Scientific Advisory Board
- Support with consortium formation and communication
- Proposal writing consultation, including partner input and alignment with European Commission requirements
- Budget preparation
- Document polishing and editing
- Submission of proposal and necessary supporting documentation

EIBIR’s knowledgeable and professional team can also provide experienced project management leadership during the course of the project. In addition, EIBIR can ensure that the project’s dissemination and exploitation activities are maximised to their full potential and reach the necessary stakeholders, utilising EIBIR’s already-established networks.

EIBIR’s active Members are able to take advantage of EIBIR’s proposal preparation services for Horizon 2020 free of charge. Regular and associate members, as well as non-members can also use the same services for a reasonable fee based on the number of project beneficiaries.

For more details about EIBIR’s services, please visit www.eibir.org or visit us at our booth in the entrance hall to discuss your project ideas.

EIBIR services help you make the most of Horizon 2020

After much debate, the start of Horizon 2020 became official on December 11, 2013. Horizon 2020 will run from 2014–2020, and it combines the European framework programme, the Programme for the Competitiveness of Enterprises and Small and Medium-Sized Enterprises (COSME), as well as the European Institute of Innovation and Technology (EIT).

Of the €710 billion budget for Horizon 2020, €90 billion has been committed to fund ‘health, demographic change and well-being’ research which is one of the six challenges under the societal challenges priority. Call topics will be announced every two years. The deadline for proposals for the first call for 2014 is March 15, five days from now. Looking ahead to the second call, the following topics of interest for biomedical imaging will be opened for 2015, with deadlines on October 14, 2014, and April 21, 2015, depending on a one- or two-stage application process:

PCH 11: Development of new diagnostic tools and technologies in vivo medical imaging technologies

PCH 12: Clinical validation of biomarkers or diagnostic medical devices (SME instrument)

PCH 14: Research for public health and intervention.

PHC 28: Self-management of health and ageing with ICT: early risk detection and disease and decision support systems based on predictive communication technologies.

PHC 14: Tools and technologies for enabling topics of interest for biomedical imaging research.

PHC 11: Establishing effectiveness of healthcare interventions in the paediatric population

PHC 27: Self-management of health and disease and patient empowerment supported by ICT – Pre-commercial procurement.

PCH 25: Self-management of health and disease and decision support systems based on predictive computer modelling used by the patient.

PHC 30: Digital representation of health data to improve disease diagnosis and treatment.

Open in both 2014 and 2015, PCH 12 is a specific funding instrument for SMEs, and will operate as an open call with three cut-off dates per year. Information about the open calls and more details about applying for Horizon 2020 projects are available on the European Commission’s website ec.europa.eu/research.

EIBIR Session

Thursday, 16:00–17:30, Room P

Biomedical imaging analysis: novel tools in neurodegenerative disease and breast cancer

Chairman: M. Niessen, Rotterdam/NL

- Introduction
  W. J. Niessen, Rotterdam/NL

- VPH-PBIM: opening doors in breast cancer care
  H. Hahn, Brussels/B

- Quantitative imaging biomarkers in dementia: the FP7 VPH-DareMIT project
  W. Niessen, Rotterdam/NL

- Horizon 2020: Improving diagnosis and medical interventions and support to medical imaging
  J.-L. Sanne, Brussels/B

Discussion

EIBIR Session

Saturday, 14:00–15:30, Room P

Molecular imaging and targeted guided therapy in gastrointestinal stromal tumours

Chairman: S. Ameis, Turin/IT

G. Schilling, Mannheim/DE

- Introduction to the MITIGATE concept
  S. Schilling, Mannheim/DE

- Molecular imaging and targeted endoradiotherapy: key methods to overcome TKI-resistancies?
  B. Mangiac, Mannheim/DE

- Stereotactic radiofrequency ablation of liver tumours: does improved targeting increase tumour response?
  W. J. Niessen, Rotterdam/NL

- Functional and molecular imaging in tumour therapy response assessment
  S. Ameis, Turin/IT

Discussion

EIBIR Session

Sunday, 16:00–17:30, Room P

ENCIIE based insights for molecular imaging in therapy

Chairman: M. Neeman, Rehovot/IL

- Introduction
  M. Neeman, Rehovot/IL

- A dual-modality gene reporter for in vivo imaging
  B. Bridle, Cambridge/UK

- Imaging for pancreatic cells transplantation
  M. Hjära, Karolinska/SE

- Optical imaging in the clinic
  D. Djuricic, Leiden/NL

- Mesenchymal stem cells constructs for image-guided cell therapy in myocardial ischaemia and digestive fistulas
  O. Tresch, Cologne/DE

- Is cell imaging relevant for the clinic?
  Lessons to be learned from pre-clinical research
  H. Hahn, Brussels/B

Discussion
As a European subspecialty society, ESGAR is an institutional member of the European Society of Radiology (ESR).

The European Society of Gastrointestinal and Abdominal Radiology (ESGAR), is an active society with a large and successful involvement in education, research and innovation in abdominal and pelvic radiology. The society has progressively increased its number of members, which rose to 1,419 in 2013. In order to attract young members and give them an active role in the society, junior membership has been in existence for several years. As a European subspecialty society, ESGAR is an institutional member of the European Society of Radiology (ESR).

Regarding education and technical standardisation, ESGAR has initiated a number of successful workshops that include case-based discussions. In 2014, the following workshops will be offered:

- Liver Imaging Workshop, April 7-8, Basel, Switzerland; Local Organiser: C. Zech
- CT Colonography Workshop, April 24-25, Oslo, Norway; Local Organiser: A. Drolsum
- Pancreas Workshop, May 15-16, Dublin, Ireland; Local Organisers: S. Skehan
- Liver Imaging Workshop, September 21-22, Bologna, Italy; Local Organisers: R. Goffert, and L. Granelli
- CT Colonography Workshop, October 8-10, Leeds, United Kingdom; Local Organisers: O. Tolon
- Bowel Imaging Workshop, October 16-17, Lisbon, Portugal; Local Organiser: C. Matos

A new technically oriented workshop is also scheduled to start in 2015. This initiative will deal with MR and MDCT of the abdomen, and how to perform the best examinations for specific clinical questions. To complement this offer, new clinically oriented workshops, held jointly with related societies, will focus on pelvic floor and inflammatory bowel disease imaging. These new ESGAR workshops will be more practical and more multidisciplinary, approaching related colleagues and societies to analyse the disease through all the relevant biological, clinical and imaging aspects. Different abdominal, gastrointestinal and disease-oriented societies are now working with ESGAR to select topics of common interest.

The ESGAR workshops will be held either as multidisciplinary technical or clinical courses, covering the full spectrum of educational programmes. This initiative will be complemented with our Summer School course for young ESGAR radiologists and final-year residents. The school will have some lectures but will be primarily focused on a case-based approach and a relaxing academic atmosphere.

Education will also be enhanced through the society’s website. The ESGAR Educational Portal will be available online. The Case-of-the-month is the right platform to interact with colleagues on tricky lesions and findings. The ESGAR Consensus Statements and Guidelines on the most relevant aspects will also be available.

The Annual Meeting of ESGAR will take place in Salzburg, Austria, June 18 to 21, 2014.

The ESGAR 2014 meeting in Salzburg will open on June 18 with a postgraduate course on ‘Abdominal vascular imaging: a multimodality approach’. Education and research will be the basis of this meeting. The Research Centre will give inputs in two quite relevant aspects. The first will deal with retrieving and appraising research data, with topics on how to perform an online literature search, how to appraise radiological literature in a critical fashion, and statistics that describe diagnostic accuracy. The more advanced session will cover variability, as it is recognised as the cornerstone of research.

More information about ESGAR can be found at www.esgar.org

Professor Luis Martí-Bonmatí from Valencia, Spain is ESGAR President.
Austrian institution excels in dose optimisation

Computed Tomography (CT) represents an integral part of today’s imaging with a considerable benefit for patients, including children. Almost every year, fascinating techniques and extensions are developed and released that allow us to improve patient care. Despite all these advantages, there has been substantial discussion about the harms of CT for several years now, with some authors regarding CT to be the new radiation threat.

In the past, radiation-induced risks were estimated from atom bomb survivor data, whereas more recent publications are coming out reporting an increased cancer incidence among patients who have undergone CT in the past (Matthews, JD et al. BMJ 2010). Children differ from adults in many respects, and the statement ‘children are not small adults’ describes it perfectly. As an example, body weight varies between ±10% in adults thus representing a mass factor of four. Paediatric radiology involves body weight from 30 to more than 100 kg thus representing a mass factor of more than 100. There is one clear fact and that is that imaging does not depend on body weight, and therefore one of the biggest challenges in children is maintaining appropriate imaging according to the principle for all paediatric patients. It is well known that children suffer from greater radiation sensitivity in comparison to adults. Additionally, the relative radiation sensitivity differs considerably during childhood, and the head and extremities are more sensitive in early infancy as compared to adolescence. This can be explained by the rapid status-cretic and intellectual development of the head within the first years of life, with inherent higher cell turnover and the extremities, as well as the existence of red bone marrow. Contrarily to this, the gonads are less radiation sensitive in babies and toddlers, since they are obviously not yet fully developed.

Paediatric radiology maps children’s growth and maturation in physical parameters like exposure settings for CT. Factors like scan technique (helical, volume, single slice), i.v. contrast injection, slice thickness, noise level or reference dose for automated exposure control, as well as types of image reconstruction and different kernels, have to be considered for all age groups and different examinations.

All parts of an examination (imaging chain) have to be optimised for all age groups, even the often forgotten scout view and tube position. An unoptimised scout view alone can expose a child to an amount of radiation equivalent to scan. Choosing a tube position below the table instead of above reduces radiation exposure to the thyroid and mammary glands by two-thirds (Figure 1). The adoption of these parameters for paediatric patients needs a certain kind of expertise and experience. Furthermore, there is evidence that low-dose CT scan techniques like high-resolution chest CT (HR-CT single CT slice at a distance of 100 cm) are not low dose. In the case of HR-CT, in 20% of paediatric patients less than 10 years of age, the mammary gland will receive a radiation dose of about 2 mSv.

Besides imaging chain optimisation, communication with clinical referred patients represents another cornerstone of radiation protection, not only in children. Establishing diagnostic pathways with clinical partners, as well as tailored examinations, are essential tools for keeping the radiation dose low. Intelligent imaging starts with the referring diagnosis and strict dose CT protocols need more attention from the radiology staff, radiographers and radiologists. Otherwise, there is the inherent risk that a non-diagnostic examination will be the result. The Division of Paediatric Radiology department of radiology at the Medical University of Graz/AT has been created, based on a biological model and experience (Figure 2). This supports the staff on duty by doing the necessary calculations of iodine volume and scan delay for all the usual CT examinations where i.v. contrast injection is necessary. This Excel sheet is the subject of a multicentre study conducted by the CT and Dose Taskforce of the European Society of Paediatric Radiology (ESPR – www.espr.org).

Additionally for CT in babies and toddlers after cardiovascular surgery a so called ‘microbolus technique’ for i.v. contrast injection was developed. This technique, based on diluted iodine contrast medium (Figure 3), in combination with other settings like exploiting the inherent greater contrast at low kV enables iodine volume to be reduced by 3–7 ml – an example is given in Figure 4.

In conclusion, paediatric radiology has to take into account all aspects when optimising examinations, regardless of age and weight. Therefore, children should only be examined in specialised institutions, where there is reasonable experience in paediatric examinations, as well as the possibility to draw the appropriate conclusions of a study. We believe that the usual ‘let us see approach in institutions with just a few paediatric patients usually results in an inappropriate dosage, which is not in accordance with the ALARA principle.

Professor Erich Sorantin is head of the Division of Paediatric Radiology, Department of Radiology at the Medical University Graz. Sabine Weissenstein and Birgit Oppelt also work at the same institution.

**Figure 1.** For scout views, the tube should be below the CT table reducing the radiation dose to the thyroid and breast by two thirds – therefore the tube above the CT couch is marked out.

**Figure 2.** Excel sheet for intravenous contrast medium injection. Radiographers have to put in name (for identification), age, weight, height and creatinine levels – injection parameters are calculated automatically for all kinds of investigations (red arrows in lower right part) including different iodine concentrations. Additionally the optimised paediatric glomerular filtration rate is computed (turns red in case of values below 60ml/min/1.73m²) and also assists in the calculation of the size-specific dose estimates based on the AAPM Report 210.

**Figure 3.** Screenshot from power inject screen for the microbolus technique, demonstrating the dilution strategy.
The International Atomic Energy Agency (IAEA) is an organisation within the United Nations family, authorised by its statute to establish standards of safety for protecting health and minimising danger to life, to provide for the application of those standards, and to foster the exchange of scientific and technical information on the peaceful use of atomic energy.

Since 2001, the Radiation Protection of Patients (RFOP) Unit has served as the focal point of the IAEA for all issues connected with the radiation protection and safety of patients, covering radiology, interventional procedures, nuclear medicine and radiopharmacy practices.

The IAEA addresses the radiation protection of patients through the International Action Plan for the Radiation Protection of Patients, updated with the Bonn Call-for-Action, which was released as a Joint Position Statement between the IAEA and the World Health Organization (WHO) in July 2013. The activities performed to strengthen radiation protection of patients internationally include providing standards, guidelines and training; facilitating knowledge exchange; giving technical assistance and building awareness.

The RFOP activities span a wide range. The Unit maintains the RFOP website (http://rhop.iaea.org), which has so far received more than 150,000 hits from more than 200 countries. It also manages international projects regarding the education and training of professionals in member states. Organising technical meetings, involving health professionals, regulatory authorities and other stakeholders such as the industry and professional organisations, is another major task of the Unit. Over the last few years, this mechanism has been used to strengthen the justification of medical exposure in diagnostic imaging, such as through the extended use of appropriate-ness criteria in more countries.

The development of international safety standards and guidance material on radiation protection in medicine is also one of the responsibilities of the RFOP Unit, with a recent example being a safety report on radiation protection in paediatric radiology. The Bonn Call-for-Action highlights actions identified as being essential for the strengthening of radiation protection in medicine over the next decade. The EuroSafe Imaging campaign of the European Society of Radiology will certainly be an important aspect of enhancing the radiation protection of patients over the coming years, promoting quality and safety in medical imaging.
The Association is actively involved in the continuing education of young radiologists, as well as qualified radiologists. We have five clinical centres around the country serving as tertiary centres of medical care and teaching. In the past few years, a lot of effort has been invested in the education of young radiologists. Due to the generational shift and radiology’s growing popularity as a medical discipline, there has been an increase in interest among young people, and an increase in the number of young specialists and residents. There are many reasons for this. The constant progress and development of technology, as well as imaging methods, has led to the growing popularity of this scientific field. In previous years, only a few decided to specialise in radiology. However, the enhancement and standardisation of working equipment, as well as improved working conditions, have made radiology a much better career choice today.

For these reasons, the Association has invested a lot of effort into the continuing education of the younger generation of radiologists. In November, due to the need for education and training of young radiologists, the Association of Radiologists of Bosnia and Herzegovina, in cooperation with the Association of Radiology of Croatia, Slovenia, Serbia and FYR Macedonia, held the second School of Magnetic Resonance Imaging on 1.5T and 3.0T.

A large number of world-renowned speakers, by their presence and involvement at this School, contributed greatly to the school’s success. A large number of topical presentations in the field of MRI caught the attention of a large number of participants at the School.

The School was held at the General Hospital Sarajevo, lasting four days, under the auspices of the Academy of Sciences and Arts of Bosnia and Herzegovina. According to the lecturers and participants, based on evaluation reports, the second School of MRI 1.5T and 3.0T received top marks for its up-to-date content, the applicability of the content, its aims and the general impression of the management and organisation.

There is a need to organise more schools like this one in Bosnia and Herzegovina, as well as in other countries in the region, because in addition to the participants and lecturers at this School from Bosnia and Herzegovina, it was attended by participants and lecturers from other countries in the region.

As radiology is one of the most expensive fields of medicine, we are trying to keep up-to-date with modern technology, so over the past several years we have made a significant effort to obtain the latest generation of equipment, as well as to modernise existing equipment in order to meet higher standards.

For 2014, the aim of the Association is to strengthen the organisation and encourage Bosnian and Herzegovinian radiologists to present their current professional and research activities in radiology at professional meetings, publish in radiology journals, and participate in congresses.

Our hope is that in future we will be able to bring Bosnian-Herzegovinian radiology up to the standard of our European and international colleagues.
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Booth #12, Extension Expo A
Support grows for International Day of Radiology

Interest in the International Day of Radiology (IDoR) has been increasing worldwide, as 110 medical and radiological societies from 59 countries celebrated the day in November 2013, a 37% increase on 2012.

IDoR, which was launched in 2012 with thoracic imaging as its theme, focused on thoracic imaging last year, and activities and events took place around the world on November 8, the date that marks the discovery of x-rays. While a meeting on hot topics in thoracic imaging was held in London, a series of lectures on lung imaging were held in Madrid, scientific presentations took place in New Delhi, interactive workshops on thoracic imaging were held in Algiers, and a conference on chest imaging was held in Guayaquil, Ecuador. Many more events took place around the world and stressed the radiologist’s role in combating lung disease.

In addition, the European Society of Radiology (ESR), in collaboration with the European Society of Thoracic Radiology (ESTR), produced a special booklet on lung imaging, Breathe easy: how radiology helps to find and fight lung diseases was written by experts in the field to give the general public an insight into how lung diseases are imaged, along with the skills and training needed to interpret those images.

“Imaging is right at the centre of medical practice. Most clinicians rely very heavily on imaging nowadays, and patients are referred for imaging studies every single day. We radiologists form a kind of central position in medical management and we’re nothing if not diagnostician: Medical imaging is right there, because without a diagnosis there is no treatment, and at the end of the day that’s what patients come for,” explained chairman of ESTI’s Thoracic Imaging and Educational Committee Doctor Sujal Desai from London, who co-authored the lung imaging booklet.

Another booklet, the second volume of The Story of Radiology, was published to celebrate the medical and scientific breakthroughs that led to the development of modern medical imaging. This series on the history of radiology is published each year on the International Day of Radiology and written by experts from the International Society for the History of Radiology (ISHRAD) and the Roentgen Museum in Germany. Both booklets, as well as every IDoR book and brochure from 2012 and 2013, are available for download on the IDoR website.

In terms of social media, the ESR team managing the IDoR Facebook page was able to build directly on the progress made the previous year, having already attracted an audience of fans for IDoR 2012. Regular Facebook posts began in August and activity increased slowly up to the week ending November 8. With the support of the ESR, Radiological Society of North America (RSNA), and the American College of Radiology (ACR) own Facebook pages, the IDoR message reached roughly a million people.

Patient organisations also joined the initiative for the first time. Major actors such as the ESR Patient Advisory Group for Medical Imaging (PAGMI), the European Lung Foundation (ELF), the European Patients’ Forum and the European Federation of Allergy and Airways Diseases Patients Associations helped to inform the public about the importance of imaging in the fight against lung diseases.

“IDoR is strongly welcomed by our organisation and all patient groups with a particular interest in medical imaging. This initiative could, moreover, provide an excellent model for other medical societies to replicate,” said Nicola Bedlington, executive director of the European Patients’ Forum.

The ESR, RSNA and the ACR launched IDoR to build greater awareness of the value that radiology contributes to safe patient care and improves the general public’s understanding of the role of the radiologist in modern healthcare. Too often, the work of the radiologist remains unknown to the patient and public, as ESR President Professor Cornelia Schaefer-Prokop from Amersfoort, the Netherlands, explained.

“Frequently people don’t know why they have to undergo imaging. They never see the radiologist, because radiologists tend to work in the background and I think that makes the International Day of Radiology so important; just to tell the general public how central the part of imaging is,” said Schaefer-Prokop, who greatly contributed to IDoR 2013 and acted as executive editor of the lung imaging booklet.

IDoR should have a positive effect on healthcare, according to ESR President, Professor Guy Frija from Paris. “I think that this day has to be considered a first step on the path towards awareness. Talking about the benefit is certainly important, but we also have to promote better use of imaging, not only for safety reasons, but also, and very simply, for improving quality of care,” he said.

Brain imaging will be at the heart of the celebrations next November and organisers expect to attract even more participants with this fascinating topic.

To get more information about the International Day of Radiology, including the booklet about lung imaging and the history of radiology, visit the official International Day of Radiology website: www.internationaldayofradiology.com
The European Society of Thoracic Imaging (ESTI) has evolved into a strong international player in the field of thoracic imaging.

In the past year, ESTI has contributed to the programmes of the World Congress of Thoracic Imaging (WCTI), the Society of Thoracic Radiologists (STR), the European Respiratory Society (ERS) and the ECR, and has intensified its links with the Fleischner Society.

The third World Meeting of Thoracic Imaging in June 2013, was hosted for the first time by an Asian country. The meeting in Seoul, Korea, was a great success with more than 1,600 participants from all around the world. The hospitality of the Korean Radiological Society was outstanding. Speakers from five thoracic societies presented the latest research and technical advances in chest imaging. The meeting was an excellent place for expanding knowledge, renewing old contacts and building new cooperation and friendship. To stimulate such cooperation, ESTI supported outstanding young members with travel grants to Korea.

ESTI is heavily investing in stronger links with Asian and American thoracic societies to promote better knowledge of current issues and cutting-edge research in the various countries. Links to the European Society of Cardiac Radiology (ESC) and the ERS are important to keep chest radiology well positioned in national and international issues. During this year’s ECR, there is a Special Focus session jointly hosted by the ERS and ESTI, which deals with right heart morphology and function. These joint programmes will be continued in future meetings. To further promote cooperation between ESTI and the ESCR, as well as the STR, joint sessions will be integrated into the annual meetings. For many years, ESTI has cooperated with the Fleischner Society with joint meetings every second year. European and American specialists are working together on white papers and recommendations such as those for management of pulmonary nodules. Few studies have drawn as much public attention as the National Lung Screening Trial (NLST), in the New England Journal of Medicine. The NLST demonstrated a 20% reduction in lung cancer-specific mortality using low-dose CT (LDCT) screening, and even a 22% reduction over a period of 6.5 years. These results exceeded expectations and are truly spectacular. Not even breast screening could provide similar numbers. Various professional American societies have therefore released positive recommendations for LDCT screening. However, the positive results of NLST have not yet been replicated by the European trials, and the results of the largest European trial (the Nielson trial) are due in 2016. Representatives of the ERS and ESTI are currently working on a joint position statement by the European professional societies.

The 2013 International Day of Radiology was celebrated with a book about thoracic imaging for the general population entitled, Breathe Easy. New Radiology Helps to Find and Fight Lung Diseases. With pleasure and enthusiasm, ESTI members wrote short summaries in patient-friendly language on how radiologists diagnose diseases of the chest. The goal was not only to increase the visibility of radiology, and its role in the workup of pulmonary diseases, but also to create an understanding of what imaging can and cannot do when diagnosing and treating lung diseases. Keeping the language readable was quite a challenge for ESTI and all European societies interested in making radiology more used to writing medical reports and scientific publications. The wide international attention proved that this was a highly successful project.

ESTI continues to support young radiologists in their research endeavors and learning ambitions. In 2013, three seed grants were given to young researchers from the Netherlands, the United Kingdom and Germany. Each year, the three best poster and oral presentations are awarded travel grants that give these young researchers the opportunity to attend a major meeting. ESTI members and ESTI’s Educational Committee were involved in defining the learning objectives of the level III ESR Curriculum, as well as the ERS European Diploma examinations. Together with ESR, ESTI provides three fellowships, giving young radiologists the opportunity to deepen their knowledge in thoracic radiology in internationally renowned European institutions. Visit our new and improved ESTI website to find links to recent publications, recommendations and the most interesting presentations from the past meetings, as well as information about scholarships, research grants and awards.

The next meeting will take place in Amsterdam, on June 14-16. Visit our booth to get more information. An interesting programme has been designed that includes cutting-edge technological developments, scientific achievements and educational sessions.

ESTI looks forward to welcoming you to Amsterdam. More information on ESTI can be found at www.myesti.org.

BY JAVENI HEIMETSBERGER

ESR works to improve communication with patients

At ECR 2013, the ESR launched the Patient Advisory Group for Medical Imaging, a subgroup of the ESR Communication and External Affairs Committee (CEAC) with the aim of bringing together patients, the public and imaging professionals in order to positively influence advances in the field of medical imaging.

Nicola Bedlington, Executive Director of the European Patients’ Forum (EPF), a pan-European patient organization representing patients’ personal representatives and an estimated 150 million patients across the European Union, has been appointed chairman of the Patient Advisory Group, and the chairman of the ESR-CEAC now serves as vice-chair of the group.

Besides the EPF, the European Multiple Sclerosis Platform (MEUP), the European Federation of Cardiothoracic (ECTA), the European Federation of Neurological Associations (EFNEA), Europanumo (the European Prostate Cancer Coalition) and the European Federation of Radiographer Societies (EFRS) are represented within the Group.

The ESR provides four more representatives including the ESR and Vice-President, the chairs of the Professional Organization Committee, the National Societies Committee and the Subspecialties and Allied Sciences Committee.

The group has developed a roadmap with the following six core goals:

- Improve communication between radiologists and patients
- Raise awareness of medical imaging among patients
- Improve knowledge of patients about imaging procedures
- Liaise with patient groups on policy issues of common interest
- Involve patient representatives in strategic decisions regarding medical imaging
- Ensure a patient-centred, ‘human’ approach is embedded in the work of the ESR

With regard to the improvement of the communication between radiologists and patients, the group has made great progress on the International Day of Radiology (IDoR), which takes place on November 8 each year, particularly through the Group’s contribution to the book on thoracic imaging. Further collaboration is planned for this year’s IDoR, as the group has proposed to dedicate IDoR 2014 to brain imaging as it is also the European Year of the Brain (EYOB).

For the first time patient representatives are going to be actively involved in two sessions at the ECR. In order to provide the patient’s point of view, they will give presentations on the interaction between patients and radiologists through social media (The role of social media in radiology: Saturday, March 8 from 10:00-11:00 in Room F2) and on Radiation risk: a patient’s perspective (Good radiation and bad radiation? How to assess and communicate radiation risk to patients and referring physicians: Sunday, March 9 from 14:00-15:30 in Room L/M).

Another core aim of the group is to improve the knowledge of patients about imaging procedures. Therefore, the Patient Advisory Group is currently revising the ESR’s patient information website which will include features that demonstrate the role of imaging with a particular focus on the patient’s needs and the kind of information patients undergoing a radiological examination are looking for.

The Patient Advisory Group is now entering a more ‘strategic’ phase, focusing on European political topics of common interest and also on cooperation with ESR committees. The Alliance for MRI has shown how vital the collaboration between scientific and patient organizations can be in European dossiers. The upcoming European Parliament elections, in May this year, provide an opportunity to join forces and raise awareness among MEPs, and future MEPs, of European health issues. The ESR supports the EFF campaign for the 2014 elections, Patients + Participants = Our Vote for a Healthier Europe.

It has been agreed to dedicate a session to a European political topic of common interest at the ECR 2015, and to increase collaboration with other ESR Committees such as the ESR Audit & Standards and eHealth & Information Subcommittees.

These and other issues will be discussed at the annual face-to-face meeting, which will take place on Monday, March 10 at the ECR in Vienna.
When it comes to politics, the question isn’t if you can afford to be engaged, but whether you can afford not to be. In recent years, the ESR has continuously intensified its engagement with European Union institutions and other international stakeholders. And for a pan-European organisation in a discipline as specialized yet as broad as radiology, it is important and necessary that you do. From explicit passages in an EU directive threatening the use of MRI to obscure provisions in international trade agreements that could affect the type of devices doctors can use in treating patients, the EU can significantly impact the health sector and its delivery of care.

As with any public affairs and lobbying function, monitoring is a large part of the workload. Being aware of developments as early as possible is essential for effective issue management; nothing must happen without our knowing about it. When we look at the legislative process in the EU, we are usually talking about timeframes of two to five years, beginning with working documents through to green and white papers to European Commission (EC) proposals, parliamentary reports, and Council decisions. And the room for manoeuvre diminishes steadily over time early awareness is crucial.

Once an issue that calls for action is identified, any measure taken requires intimate knowledge of the stakeholders and processes involved. Each issue needs a tailored response using the right instruments—sometimes a discreet meeting with a selected policy officer can be more effective than a large-scale media campaign. The role of the ESR’s International Affairs Department is to introduce the issues and concerns of our experts to the right person, at the right time and in the right way. So, what has the European and International Affairs Department been up to in the past year? Here are several of the most relevant topics of the last twelve months, some of which will be presented in greater detail in the upcoming issues of ECR Today.

The most significant achievement of 2013 was, perhaps, the successful conclusion of the ESR-led Alliance for MRI’s campaign to secure an exception for MRI in the revised Directive on Protecting Workers from Exposure to Electromagnetic Fields. This will ensure continued patient access and secure the future use of MRI technology.

The EU is in the process of overhauling its medical device legislation. In the midst of significantly diverging positions of the industry and patient groups, as well as within the European Parliament and amongst Member States, the ESR has advocated a balanced position that will enhance patient safety while ensuring a competitive market that will deliver timely access to innovative technologies for patients.

The ESR has closely monitored the negotiations for the Transatlantic Trade and Investment Partnership (TTIP), a free trade agreement between the EU and the US. The ESR has lobbied for a harmonisation of training standards for radiologists, and has actively campaigned for consistent referring to our discipline as ‘radiology’ instead of ‘diagnostic radiology’ in order to facilitate mutual recognition.

In the area of radiation protection, the ESR has progressed with its project to develop a clinical decision support system for imaging referral guidelines, and has prepared the EuroSafe Imaging campaign, which will be launched at ECR 2014 with the aims of promoting appropriate use, keeping radiation doses within diagnostic reference levels and using the as low as reasonably achievable (ALARA) principle.

The ESR has been actively involved in the EC’s eHealth Stakeholder Group and has contributed to consultations, projects and working groups on eHealth, promoting its position on telemedicine, on which the ESR conducted a survey and published a white paper earlier this year. The ESR also participates in the EU-USA eHealth Cooperation Initiative. In addition to promoting patient safety as a cross-cutting issue in all its activities, the ESR also submitted a response to a recent EC consultation on patient safety and quality of care, highlighting the importance of patient safety in relation to imaging procedures.

With legislative revision in other domains such as clinical trials, data protection and cross-border healthcare, or the launch of the Horizon 2020 Research Programme, the past twelve months have been busy for the European and International Affairs Department. And, with European Parliament elections in May, and a new Commission taking office in autumn, the next twelve months promise to be no less exciting.
The Radiology Trainees Forum (RTF) is the ESR organisation for radiology trainees. Its objective is to represent trainees’ interests within the ESR, especially with regard to education, careers, research and exchange programmes.

COMMUNITY NEWS

The Radiology Trainees Forum (RTF) is the ESR organisation for radiology trainees. Its objective is to represent trainees’ interests within the ESR, especially with regard to education, careers, research and exchange programmes.

The RTF also collaborates with the ESR to encourage radiology trainees to share knowledge and experience by increasing their participation in exchange programmes. European School of Radiology courses, and congresses. The RTF Board members also conduct regular surveys to assess interest in the

One of the new RTF Board’s innovations is to use social media for enhancing communication and exchange between radiology trainees. We are developing the use of innovations like the RTF online forum for national delegates, as well as social media platforms like Facebook and Twitter while we continue to communicate through the ESR website and the Rising Stars newsletter.

The practice of radiology is changing with the advent of new imaging techniques, e-learning, e-health, tele- radiology and personalised medicine. The RTF’s officers believe that young radiologists should take an active part in these changes. In this new era of multimedia imaging, the RTF also intends to act towards improving the relationship and interaction between radiology and nuclear medicine trainees at ECR 2014. Moreover, the RTF wants to become open to non-European countries in order to enhance the communication and exchange of trainee experience around the world. The non-European societies of radiology have been asked to appoint a delegate representative we hope to meet some of them at the ECR, along with the trainees from the other countries.

During the ECR, the RTF is going to make every effort to make trainees feel at home at the congress. The ESR provides the Rising Stars Lounge, where students and trainees can relax, communicate, and meet their colleagues. On Saturday, special sessions for trainees will take place in the lounge, and we hope you will attend. The RTF Booth in the Rising Stars Lounge will be active from Thursday to Sunday from 9am to 5pm, and on Monday morning. We are welcome to come and get more information about sessions of interest for trainees, RTF activities, exchange programmes, and grants. You can also bring your own ideas and pass them on to the RTF Board members and national delegates.

It will be a great opportunity for you to take part in informal and relaxed discussions with European colleagues and representatives. The schedule of national delegates at the booth will be published in ECR Today online.

The traditional and greatly appreciated RTF Highlighted Lectures will take place on Sunday, 10-12.00 noon in Room Board B (M Building). All attendees can participate in a book voucher raffle.

If you want to know more about the RTF you are more than welcome to visit our booth or participate in our activities during the ECR. Of course, you are also invited to visit our webpage on the ESR website and contact us with your ideas, questions, or concerns at rtf@myesr.org. Radiologists of all ages are welcome. Come and join the next generation of radiologists at ECR 2014.

BY WALID MENESSI
Top tips for trainees and teachers
Part 1: Audit

Audit is perceived by many as the boring counterpart to the more exciting ‘proper’ research, which has more potential for publication. But audit is important and will become even more so in future. Read the following interview with the chairperson of the ESR’s Professional Organisation Committee, Dr. E. Jane Adam, to get some highly valuable insights into why we should all undertake audits, as well as some advice on how they can be planned and published. You will also find out how audit may even help you in an important interview.

ECRT: Why do we need audit and why is it so important?

E. Jane Adam: Unless we sample and evaluate what we do in a critical way, we will never know how our departments are performing and how well and safely we are looking after patients. Audit allows us to be reassured about what we are doing to a satisfactory standard, and gives us information about where improvements should be made. Through re-audit we can then check that the anticipated improvement has actually been achieved.

ECRT: Why should trainees choose to do an audit rather than a research project?

EJA: I am afraid it is not a case of choosing between them: trainees should do both. They are different, require different knowledge and skills, but experience with both can be carried through to the rest of your career. A familiarity with audit will ensure that you do not become complacent, but critically evaluate what you and your department do.

ECRT: How does audit differ around Europe?

EJA: Some countries have taken to audit with more enthusiasm than others. In fact clinical audit in relation to ionising radiation exposure is mandatory under EU legislation and there are EC guidelines on how to do it. The ESR has published an easy guide in Insights into Imaging (see reference below), and is working on an audit handbook to help those just starting, but where people are used to it, it has become a routine part of practice.

ECRT: Some people think audit is boring. How can trainees or teachers find an exciting topic, even in a smaller hospital?

EJA: I am not sure that I can make it really exciting! However, it is very satisfying either to be able to say to your clinical colleagues or management that you have audited something and it is fine, or instead to make a change and show things have improved. It certainly makes you look very professional. In a smaller hospital, changes can have quite a noticeable impact so it may be even more satisfying in a smaller hospital, or where a problem has been identified and solved, or indeed audit has highlighted the need for more investment in management. And of course, it is a good topic to discuss when you are interviewed for a more senior post, because you may know more about the topic than the interviewer, who is always good.

ECRT: Could you explain how an audit is planned and tell us what kind of pitfalls trainees should watch out for?

EJA: You can either identify something where there may be, or is perceived to be a problem, or important areas where vigilance is important such as radiation protection. You need to research what level of performance should be your target. If not, you need to think it through and implement changes and then re-audit. The main thing to remember is that audit must be collaborative and aimed at quality improvement. It should not be a weapon, or used as a way of assessing or criticising others.

ECRT: What kind of audits do you think are publishable and what kind of opportunities are there to get them published?

EJA: This is quite difficult, because audit is essentially a local process, but if there are genuine lessons or a very novel approach it may be publishable in a peer-reviewed journal. However, there are opportunities, for example there is an EPSOS poster section at ECR for audit. The Royal College of Radiologists annual meeting accepts audit posters and other national societies may have similar meetings accepting audit presentations/posters and the two best are published in Clinical Radiology. The RSNA now accepts quality improvement ‘storyboards’ which are essentially audits, and the authors of the best of these are invited to submit to Radiographics.

ECRT: Do you have any other tips on audit for trainees?

EJA: Start with something small and simple, and you will see how easy it is.

Further reading
4. myESR.org

E. Jane Adam is a consultant in diagnostic radiology and honorary senior lecturer at St. George’s Hospital, London. She chairs the ESR’s Professional Organisation Committee and has previously served on a number of the society’s other bodies. She is also a highly active member of the Royal College of Radiologists.
VIENNA–BERLIN

THE ART OF TWO CITIES
AN EXHIBITION AT THE BELVEDERE

Otto Rudolf Schatz, Balloon Seller, 1929
© Belvedere, Wien
As early as the late nineteenth century, both Berlin and Vienna were considered as rising metropolises. Nevertheless, they have always, to the very present, represented divergent models of identification and different cultural self-concepts. Whereas the mutual exchange between the two cosmopolitan cities has already been intensively explored in terms of literature, theatre, and music, the juxtaposition of developments in the visual art and an analysis of their correlations constitute a blind spot. From an art historical perspective, they have merely been recognised in the form of individual biographic studies. Spacing the period from the early twentieth century to the interwar years, Vienna – Berlin. The Art of Two Cities, organised in cooperation between the Österreichische Galerie Belvedere and the Berlinische Galerie, is the first exhibition to be devoted to artistic parallels, differences, and interactions between the two cities.

On the one hand, there is Berlin, a vast metropolis without a grown centre that almost gives an American impression; Vienna, on the other hand, the city of opertar, is determined by Baroque form and primarily associated with decadence. Whereas Vienna was the capital of a venerable monarchy, Berlin was forced to establish itself as the new centre of power against plutoistic tendencies in the German Empire. Accord-

ingly, the visual arts in Berlin evolved as a means of propaganda either promoting the Prussian pursuit of hegemony or in opposition to it. It was different in Vienna, where the Habsburg monarchy allowed avant-garde cultural ambitions, which were sup-

ported by the liberal bourgeoisie, to unfold. Whereas the Berlin Secession, first of all, had to fight for artistic freedoms, the Vienna Secession could rely on the support of the upper classes, whose members largely financed the Vienna Secession's magnificent building," says Agnes Husslein-Arco, Director of the Belvedere.

"The attitude of the Berlin avant-garde, oppositional throughout, is reflected by the fact that the Berlin Secession took a hostile stance towards the young Expressionists, while in Vienna Gustav Klimt promoted such young artists as Oskar Kokoschka, Egon Schiele, and Max Oppenheimer like a father. Whereas Vienna was the capital of a venerable monarchy, Berlin was forced to establish itself as the new centre of power against plutoistic tendencies in the German Empire. Accord-

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**WHAT’S ON TODAY IN VIENNA?**

**Theatre & Dance**

*Please note that all performances, except at Vienna’s English Theatre, are in German.*

**Burgtheater**
- 1010 Vienna, Dr. Karl-Lueger-Ring 2
- Phone: +43 1 51444 4145
- www.burgtheater.at
- **20:30** *Spatz und Engel* by Daniel Große Boymann & Thomas Kahry

**Schauspielhaus**
- 1090 Vienna, Porzellangasse 19
- Phone: +43 1 317 01 01
- www.schauspielhaus.at
- **20:00** *Die Ereignisse* by David Greig

**Theater in der Josefstadt**
- 1080 Vienna, Josefstädter Straße 26
- Phone: +43 1 43 707 300
- www.josefstadt.org
- **19:30** *Quartett* by Heiner Müller

**Vienna’s English Theatre**
- 1080 Vienna, Josefsgasse 12
- Phone: +43 1 402 12 60 0
- www.englishtheatre.at
- **19:30** *Other Desert Cities* by Jon Robin Baitz

**Volkstheater**
- 1070 Vienna, Neustiftgasse 1
- Phone: +43 1 521 11 400
- www.volkstheater.at
- **19:30** *Maria Stuart* by Friedrich Schiller

**Concerts & Sounds**

**Konzerthaus (Classical Music)**
- 1010 Vienna, Lothungergasse 20
- www.konzerthaus.at
- **19:30** *Camerata Salzburg, conductor Philippe Herreweghe, Alexander Lonquich, piano, L. van Beethoven, F. Chopin*

**Musikverein (Classical Music)**
- 1010 Vienna, Bösendorferstraße 12
- www.musikverein.at
- **19:30** *Wiener Brahms Trio, E.-A. Chausson, C. Debussy, D. Shostakovich*

**Porgy & Bess (Jazz)**
- 1010 Vienna, Riemergasse 11
- www.porgy.at
- **20:30** *Caravaggio, French Jeunesse Jazz & beyond*

**Arena (Alternative Music)**
- 1010 Vienna, Baumgasse 80
- www.arena.co.at
- **19:00** *Chimaira (US) + guests*

**Opera & Musical Theatre**

**Theater an der Wien**
- 1010 Vienna, Linke Wienzeile 6
- www.theater-wien.at
- **19:30** *La Nozze di Figaro* by Wolfgang Amadeus Mozart (opera in concert) Conducted by Nikolaus Harnoncourt
  With Christian Gerhaher, Christine Schäfer, Mari Eriksmoen, André Schuen, Elisabeth Kolman, Rüdiger Rammold, Maurer Peter

**Wiener Staatsoper Vienna State Opera**
- 1010 Vienna, Opernring 2
- www.wiener-staatsoper.at
- **19:00** *L’Elisir d’Amore* by Gaetano Donizetti, conducted by Guillermo García Cabo
  With Nino Machaidze, Charles Castronovo, Alessio Arduini, Erwin Schrott

**Ronacher**
- 1010 Vienna, Seilerstätte 9
- www.musicalvienna.at
- **19:30** *Der Besuch der alten Dame* by Michael Reed, Moritz Schneider