Radiology and the law in Colombia: from practice to reality

Colombian radiologists are forging ahead when it comes to the implementation of laws and regulations specific to the exercise of radiology and diagnostic imaging. The legislative Act 67 of 2001 governing the practice of radiology in the South American nation is something of an anomaly in the Americas. Even the U.S., which operates under the Stark Law regulating issues concerning medical practice, does not have a similar law specific to the practice of radiology.

“There is a marked difference in the way we operate since the law 657 of 2001 came into force, optimising all spheres of professional work for radiologists,” noted Dr. Rodrigo Restrepo from the Medellin Clinic, Medellin, who was head of the Asociación Colombiana de Radiología when the Act 657 of 2001 came into law. “There is a greater sense of identity and confidence within the radiology community in Colombia.”

However, in today’s ever-changing world with the discovery of novel techniques and technologies and new forms of practice and care models, there is an underlying concern about what this could mean for the future of the practice of radiology. “This concern or premise is real, forcing us to think in a broader, more comprehensive way about the long-term feasibility of the way radiology is practiced,” he stated. “There are many in the medical community who agree that a certain number of assumptions may be considered unbreakable ‘precepts’ to guarantee, from the perspective of Hippocratic Ethics, the optimal practice of medicine for the benefit of the patient. These provisions include upholding the right for radiologists and diagnostic imaging professionals to practice independently within an interdisciplinary group.”

At today’s ESR meets Colombian plenary session, key figures from the country’s radiology community will put forward their recommendations for other nations to consider the Colombian experience when looking at ways to maintain and raise the standard of quality in radiology. The keynote session will focus on promoting a comprehensive strategy for navigating the radiology-centred regulatory laws. Prior to the enactment of Colombia’s radiological law, the profession was marred by a number of deficiencies in the legal framework governing the practice of radiology, including the regulation of the operation of high-risk imaging radiation, low quality radiological practice by non-radiologist specialists, and the lack of trust of the general population and patients about the quality of radiology. According to the World Health Organization, countries with lower levels of social development are more susceptible to violations of patients’ rights when it comes to the implementation of control instruments guaranteeing the quality of health services. As Restrepo explains, exhaustive and restrictive legislation becomes increasingly necessary in these types of situations, and, coupled with other social mechanisms such as effective monitoring and control systems, an appropriate balance between the regulated and executed can be obtained.

In Colombia, the subsequent implementation of a regulatory framework to govern the practice of radiology has imposed a number of essential restrictions on non-suitable personnel, especially in the practice of ultrasound and general radiology, as well as the limitations imposed on other specialists practising imaging, resulting in an acceptable level of service quality and patient safety.

Just as there are opportunities, there are risks to the ethics and quality of medical practice. The two main threats, self-reference and continued on page 2
and so-called perverse incentive, can be applicable in radiology and diagnostic imaging, which is why, in Colombia, regulations are now in place to guarantee the permanence, relevance, and independence of the attending radiologist.

An equally important issue concerns Legal Medical Responsibility and the justice, malpractice, and civil or criminal consequences arising therein. Restrepo highlights suitability and independence as factors playing a key role in the burden of responsibility of the medical act. He believes interdisciplinary groups are the most expeditious formula to support the axiom that medicine is of means and not results. "It is an inexact science in which the higher the number of experts to join in the process, the better the result and lower the load of individual responsibility," he continued. "The radiologist is essential and irreplaceable in this regard."

For over 70 years, the Asociación Colombiana de Radiología has shown its ability to adapt and evolve in line with the evolution of the specialty it represents. According to Dr. Federico Lubinus, the current president of the association and a radiologist in the Department of Diagnostic Imaging at Centro Medico Arilda Lulío, Bucaramanga, market needs and environmental pressures have forced today’s radiologists to adapt to the multidisciplinary nature of the provision of healthcare, allowing for better use of resources with less morbidity and shorter hospital stays. He thinks this change has been driven by the development of new diagnostic techniques that allow healthcare professionals to share large volumes of imaging data without the technological limitations in communications that occurred in the past. Furthermore, as the practice of radiology changes, so does the nature of professional associations; they move to adopt a more international outlook by aligning with other leading radiological societies across the globe.

"Being recognised as an influential partner in the world of radiology has meant that we are now able to participate in forums such as ECR to demonstrate our culture and achievements, and our peculiarities," said Lubinus.

Musculoskeletal imaging is an area of special expertise among Colombian radiologists. (All images provided by Asociación Colombiana de Radiología)
The European Society of Radiology (ESR) welcomes the European Society for Hybrid Medical Imaging (ESHI) under its umbrella, in line with efforts to increase training in nuclear medicine. The official launch is taking place now at ECR 2016. Improving patient care lies at the heart of the new society and can be enhanced by optimising the use of hybrid imaging by using both in the PET and CT or MR part for diagnostic purposes, which is not always done today, ESHI President Dr. Katrine Riklund told us in an interview.

Combining nuclear medicine and advanced imaging such as CT and MRI is becoming increasingly crucial in the routine staging of oncologic disease, treatment planning, and follow-up, she added. The molecular, biochemical, and structural information that hybrid imaging reveals is advantageous when compared with the separate data provided by each technique on its own and it can optimise management of cancer patients, particularly those suffering from solid cancers and lymphoma.

However, radiologists in training across Europe systematically report that the cross-over training needed to educate the next generation of imaging specialists is needed to educate the next generation of nuclear medicine specialists. A report that more cross-over training across Europe systematically enhances patient care. The goal was to advance the quality of performance and reporting of hybrid imaging by defining the scope of training for medical specialists.

In November 2014, a session about hybrid imaging training was held during the Annual Leadership Meeting of the ESR’s member societies. The vast majority of the attendees supported the idea of establishing a European society for hybrid imaging. Given the existence of societies such as EANM and the European Society of Molecular Imaging, it remains unclear how large ESHI’s membership will be, but Riklund remains optimistic about the future. "There may be some overlap of membership between societies; I, for example, am a member of both ESR and EANM. However, there is increasing discussion of hybrid imaging and its role in high-end work-up, so ESHI could become a big society," she said.

With continuous education, most hybrid examinations should be read by one specialist in the future, Prof. Katrine Riklund said. 

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Hot Shots
from Day 4

Photography: A. Rinkly, S. Kreuzberger
Complications are a delicate matter, but must be openly confronted if medicine is to advance. Join distinguished faculty presenters at ICCIR to explore IR cases that did not go as planned, and discuss how such complications can be avoided or best managed.

www.iccir.eu
BY CYNTHIA E. KEEN

Building Europe’s wish list for technological change and modernisation

If ESR members could make a wish list relating to imaging technology in Europe, what would be their top priority? It might be that all radiology departments should be comparable with respect to having enough modalities for the populations they serve and that the modality mix should include enough new equipment with the latest technology.

Another popular wish would be to embrace eHealth, making access to radiologists and specialist consultants easy and rapid through tele-diagnostic initiatives. The wish would include harmonisation, standardisation of imaging protocols, dose reduction, initiatives, procedure codes, radiology lexicons, and structured report templates. This is quite a wish, but it hasn’t happened yet.

Prof. Boris Brkljačić, chairman of the department of diagnostic and interventional radiology of University Hospital ‘Dubrava’ in Zagreb, Croatia, hopes the situation will improve.

“Health authorities throughout Europe need to ensure that patients are being examined on state-of-the-art radiology equipment. ESR recommends that imaging modalities be replaced after 10 years. Disparities will always exist, but even in countries with weaker economies, radiology departments in major institutions should be well equipped with good quality equipment,” he told ECR Today.

Impediments to acquisition of new and most appropriate equipment for a hospital’s needs are more than lack of capital funds. Brkljačić explained that in some countries, including Croatia, the process of equipment renewal is difficult due to lengthy and tedious public procurement procedures. Additionally, health authorities may purchase equipment without consulting professional radiology organisations. He recommends that radiological societies work to educate their health authorities about the clinical importance of updated modalities and to convince them that renewal procedures be transparent and rapid.

Brkljačić contends that radiologists are not vocal enough about the enormous contributions that radiology makes to modern healthcare. It is the responsibility of radiologists to demonstrate to health authorities and the public how important it is to reduce radiation dose exposure with the use of state-of-the-art CT equipment that provides excellent imaging quality at much lower radiation dose.

“Cardiac CT is a typical example of the evolution towards lower radiation exposure levels, while improving lesion conspicuity. The newest CT technology has only 10–30% of radiation exposure levels of CT systems made only five to six years ago. In the context of the renewal of the equipment, this is a very important point we need to make clear to all health authorities involved in the process,” he explained.

An era of decreasing resources throughout Europe has stimulated interest by decision makers in the importance of protecting technology investments through a consistent adoption of interoperable standards, according to Prof. Davide Caramella, chair of the radiology department of the University Hospital in Pisa, Italy.

“In addition, there is a trend in Europe towards the implementation of increasingly large hospital networks. This trend towards consolidation is another driver of interoperability from the European perspective.”

The diversity of healthcare for radiologists practicing in Europe is reflected by the ESR. With more than 3,000 individual members working across Europe and beyond, the ESR represents a broad international perspective. The ability of individuals living in a European Union member country to travel without restraint to other member countries has made the need for cross-enterprise eHealth communications a very important but very difficult to attain 21st century priority.

Within Europe, clinical cross-enterprise communication that exists takes place mainly within national boundaries. Caramella explains that this is a factor of autonomous national health systems. Cross-enterprise communication is currently taking place primarily within hospital networks or in geographic hospital regions. In the region of Tuscany, Italy, the establishment of three large healthcare enterprises serving more than one million inhabitants is now complete. The three university hospitals of Pisa, Florence, and Siena communicate with each other, and with the community hospitals of the region.

Caramella said that much remains to be done in cross-border enterprise communication in teleradiology and telemedicine, according to Prof. Davide Caramella from Pisa.

However, he explained, “This is a reactive rather than proactive attitude towards the implementation of new technologies. Specifically, there is a fear of increased costs in the short term. And there is a perception by healthcare administrators that investment in IT infrastructure can be postponed in favour of more glamorous ‘medical innovations.’”

“The radiology profession has led digital and IT innovations. It is our responsibility to develop a vision on imaging technology and become more vocal about the need for the medical profession to catch up with the rest of the world with respect to cross-enterprise, cross-country, and global communications.”

Since 1998, the European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry (CODIR) has been surveying the type, number, and age of modalities in European countries. A comparison between its 2003 and 2008 data reveals that Europe-wide, the installed base of every type of modality has aged.

According to COCIR, “If the current aging profile trend of medical imaging equipment is not addressed, European healthcare systems risk continuing to struggle to meet the challenges generated by the ageing of its populations and workforces, the increase of chronic diseases, patient security, quality expectations, and healthcare system sustainability in the widest sense.”

CODIR reports that in 2013 over 50% of CT modalities in Croatia were 10 years old, and that over 40% were 20 years old.

Reference

Professional Challenges Session
Sunday, March 6, 08:30–10:00, Room O
PC16 European variation in imaging: focus on technology

- Chairman’s introduction
  O. Frisén, Paris/FR
- PACS and eHealth
  D. Caramella, Pisa/IT
- Reporting and communication
  O. Ratli, Geneva/CH
- Procedure codes and lexica in radiology for supporting workflow improvements
  P. Müllenderger, Mainz/DE
- Equipment and innovation
  B. Brkljačić, Zagreb/HR
- Panel discussion: What is the European vision on imaging technology?

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Mothers’ survival must be top priority in emergency imaging of pregnancy

Imaging pregnant patients is always challenging, but in an emergency room context, the challenge mounts. In a State of the Art Symposium today, delegates will learn about the appropriate uses of imaging techniques for pregnant emergency patients, radiation dose concerns, and much more.

Pregnant patients represent a special subgroup of trauma victims, according to Prof. András Palkó from the University of Szeged in Hungary. “Physiological and anatomical changes in the patient’s organism significantly influence the type, severity, and extent of outcomes of injuries,” he noted. “Radiation protection considerations are of utmost importance in this patient group, therefore the diagnostic imaging algorithm and protocol is to be adapted accordingly.”

Radiologists must understand the primary goal is to guarantee the survival of the mother, he added. In his presentation, Palkó plans to discuss the imaging modalities used in the evaluation of pregnant trauma patients, identify the imaging findings associated with nonpregnancy-related and pregnancy-specific injuries, and discuss a diagnostic imaging algorithm for the evaluation of polytrauma in pregnancy.

Prof. Marie-Pierre Revel, from Service de Radiologie A at Hôpital Cochin in Paris, will discuss pulmonary embolism (PE) in pregnant status that mimic those of polytrauma in pregnancy. “PE is often suspected because there is an increased risk of PE during pregnancy due to the elevation of pro-coagulant factors, and because there are many symptoms due to the pregnant status that mimic those of PE: shortness of breath, tachycardia, lower limb oedema, etc.” Revel said. “So there are many referrals, but few confirmed PE: PE prevalence is low during pregnancy, below 1% in most series.”

However, although PE prevalence in low, it remains one of the major causes of maternal death in developed countries: it’s the first cause in the U.K., and the third cause in France, after eclampsia and delivery haemorrhage.

Both scintigraphy and CT angiography deliver reliable information about PE, however several general radiologists do not know. Revel added. “The two techniques have the same 20% rate of inconclusiveness – it is less for scintigraphy than in the general population and more for CT than in the general population,” she said.

The pros for scintigraphy are the low radiation dose to the maternal breast, but the cons are it is inconclusive when chest x-ray is abnormal, or in women with obstructive lung disease; it is unable to diagnose alternative diagnoses to PE, and availability out of hours may be an issue.

The pros for CT are alternative diagnoses to PE can be identified; it can be performed when chest x-ray is abnormal, or in women with obstructive lung diseases; and availability is much higher. But the cons are much higher radiation dose to the maternal breast.

During her talk, Revel intends to explain how to limit CT inconclusiveness.

“The solution is to use a large amount of contrast (20 mL) and to ask the woman just to stop breathing and to not take a deep inspiration, which favours unscathed blood flow from the inferior vena cava,” she said, adding that a single cine in utero exposure to iodinated intravenous products is unlikely to have an effect on a foetal thyroid function at birth, something most general radiologists fear.

“If lung scintigraphy is available for a pregnant woman who has a normal chest x-ray and is suspected of having PE, the good choice is lung scintigraphy because breast radiation dose is very small compared with CT, there is no iodinated contrast medium injection, and scintigraphy has a high negative predictive value,” stated Revel. “If other situations or if alternative diagnosis to PE is also suspected, CT is the good option and is safe for the foetus as well.”

During the session, Dr. Magdalena Wozniak, from the Department of Paediatric Radiology at the Medical University of Lublin in Poland, will discuss the risks of MRI and contrast media to the foetus. Prof. John Damilakis from the Department of Medical Physics at the University of Crete in Iraklion, will specifically address ionising radiation and when radiologists should be concerned.

The session will close with a panel discussion on emergency imaging during pregnancy, delegates addressing what is best for mother and baby.

State of the Art Symposium
Sunday, March 6, 08:30–10:00, Room E1
SA 17 Emergency imaging of the pregnant patient

- Chairman’s introduction
  R. Basilico; Chieti/IT
- Polytrauma: US, CT or MR
  A. Palkó; Szeged/HU
- Pulmonary embolism: CT or scintigraphy
  M. Revel; Paris/FR
- MRI and contrast media: what are the risks for the foetus?
  M. Wozniak; Lublin/PL
- Ionising radiation: when should we be concerned?
  J. Damilakis; Iraklion/GR
- Panel discussion with sample cases presentation: Emergency in pregnancy: what is best for the mother and baby?
Improving safety and quality in radiology departments

Quality and safety in medicine have become topics of increasing interest in recent years and are principles that are fundamental to effective healthcare. Diagnostic and interventional radiology, nuclear medicine, and radiotherapy are core services to most clinical areas and indispensable in modern medicine. But, compared with other medical disciplines, the possible direct causes of patient harm that can arise from these services may not be immediately recognisable.

Even when procedures are performed correctly, patients can still be harmed. Many reports have identified suboptimal radiological processes, such as mislabelled images that lead to wrong diagnoses, or wide ranges of reported variabilities in diagnostic sensitivity for the interpretation of CT results, and it is clear that there are many opportunities for improvement in radiology.

Improving quality and safety can be both a significant challenge and an opportunity for radiologists. Emerging challenges in medical imaging include weak policies, action fragmentation, and discontinuity work-force shortages, and low awareness of procedure utilisation.

In her presentation, Prof. Laura Oleaga Zufiria, from the department of radiology at the Hospital Clinic Barcelona, Spain, will provide an insight into the concept of overall quality and safety in a radiology department, indicating different tools that can be implemented for quality control.

Quality and safety can be improved in all different stages of the radiological process, beginning with patient identification, imaging tests, reports, and communication. Communication errors for example, often the root cause of sentinel events, can be traced to radiology reports where clinicians are not aware of serious reported findings.

Opportunities to implement and improve quality and safety within the radiology department include greater equipment safety, greater infection control, and patient education, using tools such as a patient identification policy or a system for reporting incidents to analyse and report complications and adverse events.

One of the biggest challenges is perhaps the increased demand that has been stimulated in part by technological advances and an ageing population. Improved work-load increases errors, increased use increases radiation exposure and thus might result in patient radiation doses exceeding threshold values.

New IT tools enable delivery of the right dose and prevention of excessive medical radiation exposure, while still producing diagnostic high quality images. But monitoring and managing radiation dose across entire systems, and optimizing overall performance with analytic tools to find the perfect balance between dose and image quality, requires appropriate actions, so that incomplete or misleading data can be avoided, while the data reliability provided by the software is increased.

“Dose monitoring systems collect data from the PACS. The advantage is that data are readily available, but on the other hand, data stored in our PACS are not primarily designed to provide consistent information about dose performances of our equipment and therefore, a thorough analysis needs to be done in order to ensure that the dose data retrieved from the PACS can be meaningfully used to benchmark our daily practice. For example, it is not unusual that an examination stored as ‘chest CT’ contains images belonging not only to the thoracic area, but also to the abdomen and the pelvis. As a consequence, the dose data of such a procedure may be singled out as excessive for a chest CT, while being totally acceptable for a thoraco-abdominal CT examination”, explained Prof Caramella.

Professional Challenges Session

Sunday, March 6, 10:30–12:00, Room D
PC 16 Monitoring safety and quality

- Chairman’s introduction
  G. Fria, Paris/FR
  A. Torresin, Milan/IT
- Experience of total management of quality and safety
  L. Oleaga Zufiria, Barcelona/ES
- Dose monitoring systems in CT
  D. Caramella, Paris/FR
- Experience from a group of imaging centres
  A. Palkó, Szeged/HU
- Dose monitoring systems in interventional radiology
  A. England, Salford/UK
- Panel discussion: What are the bottlenecks in safety and quality management?
  This session is part of the EuroSafe Imaging campaign.
The evaluation of lower back pain should include a search of the patient’s complete, focused medical history looking for ‘red flags’, which include severe or progressive neurologic deficits such as problems with bowel or bladder function and saddle anesthesia, fever, trauma, serious underlying medical conditions, and sudden back pain with spinal tenderness. The latter especially applies in patients with a history of cancer, osteoporosis, or steroid use. If such red flags are found, an urgent MRI examination should be performed.

In primary care, the most commonly used imaging modalities include x-ray, CT, MRI, and nuclear medicine bone scans, whereby the most commonly ordered spinal imaging test is x-ray, as it is helpful for evaluating fractures, bony deformities including degenerative changes, sacroiliac, vertebral body height, and bone density.

If the patient’s history and the physical exam do not suggest a mechanical cause of back pain, or red flag symptoms are present, then x-rays are part of the initial examination process. MRI and CT are recommended in cases of severe neurologic deficits or patients with serious underlying conditions such as vertebral infections or cancer. As MRI allows better visualisation of soft tissues and the spinal canal and does not require radiation exposure, it is preferred over CT.

To ensure correct pain management, radiologists undertaking back pain procedures should be adept at clinical assessment as well as imaging assessment. In his lecture during today’s ECR Master Class on MSK and intervention, Dr. David Wilson, from the department of radiology at the Nuffield Orthopaedic Centre, Oxford, U.K., will explain which pain procedures should be performed. In his lecture during today’s ECR Master Class on MSK and intervention, Dr. David Wilson, from the department of radiology at the Nuffield Orthopaedic Centre, Oxford, U.K., will explain which pain procedures should be performed.

During the session, which includes lectures on biopsy of soft tissue and bone tumours, and painful solitary bone lesions, Dr. Matthew J.C.M. Rutten, from the department of radiology at the Jeroen Bosch Hospita, ’s-Hertogenbosch, Netherlands, will speak about injectables, with a special focus on steroids and platelet-rich plasma (PRP), and explain the evidence required for their use and appropriate techniques in MSK joint and tendon intervention.

The range and number of applica- tions for ultrasound-guided muscu- loskeletal interventions, such as dry needling and autologous plate- let-rich plasma (PRP), and explain the evidence required for their use and appropriate techniques in MSK joint and tendon intervention.

The use of PRP, which is produced by centrifuging heparinised whole autologous blood for 15 minutes and separating the platelets from the other blood components, is also a subject of controversial discussions. Part of the rationale for its use is related to the fact that when platelets reach the site of injury, they release chemokines and growth factors, which stimulate reparative processes and block calcification processes in the tendon. The latter are caused by tissue inhibitors of metalloproteinases 1 and 3 (TIMP-1 and -3), other growth factors include vascular endothelial growth factor (VEGF), platelet derived growth factor (PDGF), and transforming growth factor (TGF-B1). Positive effects of PRP have been demonstrated in the laboratory and in non-randomised studies, but even though treatment with PRP and corticosteroid injections holds great promise and has received extensive publicity, there is an ongoing debate about indications and their poten- tial effectiveness in the treatment of injuries. Familiarity with the commonly encountered side effects leads to a more accurate and proper clinical management, which is why they will be especially highlighted in today’s session.

ECR Master Class
Sunday, March 6, 10:30–12:00, Room A
Musculoskeletal
E3 1826 MSK and intervention

- Chairman’s introduction
  A. Gangi; Strasbourg/FR

- A. How to biopsy soft tissue and bone tumours
  G.K.O. Åström; Uppsala/SE

- B. Lower back pain: what can I do?
  D.J. Wilson; Oxford/UK

- C. Injectables – steroids and platelet-rich plasma (PRP): how and when?
  M.J.C.M. Rutten; ’s-Hertogenbosch/NL

- D. Painful solitary bone lesions: what is the most appropriate approach?
  F. Arrigoni; Diquela/IT

From soft tissue biopsies to painful solitary bone lesions: update on MSK and intervention

At some time in their lives, approximately two thirds of adults are affected by acute lower back pain, and in a majority of these cases, the pain is self-limiting and benign with no cause identified. Patients with lower back pain persisting for several weeks need to be investigated and potentially treated with interventional techniques.
Radiographers are jointly responsible for accurate imaging examination, the number of which is increasing steadily. Often working in interdisciplinary teams, radiographers deal with non-invasive and interventional procedures, radiation safety, and patient protection. They are supervised on various forms of radiography, screening, and much more. They play a very important role in the management of medical imaging and are responsible for the well-being of the patient during the examination. In order to achieve the best diagnostic outcome, how to perform examinations, and how to deal with emergencies, which are always possible during an examination, radiographers use not only a variety of different techniques and imaging modalities, but also their professional judgement. It is therefore crucial for radiographers to be familiar with the latest technology in order to be able to ensure the best image quality as well as optimal patient safety.

In daily practice, radiographers’ field of activity includes trauma imaging, plain film radiography, ultrasound investigations, computed tomography examinations, breast imaging, urography, gastro-intestinal procedures, magnetic resonance imaging, nuclear medicine imaging, functional studies, practice development, and service management. In today’s session, Mihá Kász, from the department of neuroradiology at the National Institute of Clinical Neuroscience and the Bored-Country Hospital, Miskolé, Hungary, will discuss image quality optimisation in MRI from a radiographer’s perspective and inform participants about recent developments in MRI and new dose-efficient scanners.

MRI is used extensively in clinical routine to produce images of several biological functions, anatomical structures, and the presence of disease. As MRI can be used to selectively image different tissue characteristics, MRI images are distinctly different from images produced by other modalities. The technology available can automate workflow and decrease examination times, helping radiographers and radiologists to achieve the best possible outcomes. “New developments such as parallel imaging techniques, new detection opportunities, simultaneous multi-slice imaging and perfusion imaging without contrast agents enable shorter examination times and provide more precise information about the patient,” said Kász. But at the same time, a significantly increased range of adjustable parameters and other additional factors, which come along with technical developments, makes the process of image optimisation even more complex. “Due to technical advances, image optimisation is more complicated. It is more challenging to detect and eliminate image artefacts and to control MRI examinations,” he said.

In the area of CT, recent advances such as automatic exposure control, iterative reconstruction, and low-kV optimisation have made the optimisation process easier on one hand, but on the other hand, radiographers getting to grips with new CT advances are facing new challenges, as they need to understand the principles offered by modern equipment while dealing with basic parameters like tube voltage, collimation, pitch, and patient positioning, which still play a very important role in ensuring optimal results.

Optimal image quality in CT depends on a variety of parameters such as high-contrast spatial resolution, image noise, low artefact content, and low contrast detectability. In his presentation, Dejan Pekarovic, from the institute of radiology at the University Medical Center of Ljubljana, Slovenia, aims to give an insight into the role of the radiographer in optimising CT imaging protocols and how new technological advances in CT can be exploited for image quality optimisation.

Last but not least, Effie Constantanegianni, from the radiological imaging department at the Agia Sophia Children’s Hospital of Athens, Greece, will discuss the contribution of the radiographer in producing high quality x-ray images. A high quality x-ray image is characterized by many factors, including an appropriate level of subject contrast and sufficient brightness and density to display anatomical structures, maximum resolution, and minimal distortion. Major challenges in performing x-ray radiography include achieving the best image quality while using the lowest radiation dose and therefore avoiding retakes, which expose patients to unnecessary ionising radiation and waste resources. A lot of repeated examinations can be avoided by strict compliance to the principles of radiography and procedures, so good communication, close cooperation between radiographers and radiologists, and continued education and training with new technologies and adopted protocols are all of great importance for the comprehensive patient care.

**Refresher Course: Radiographers**

Sunday, March 6, 10:30–12:00, Room D2

**RC174 The magic of excellent images**

- Chairman’s introduction
  - R. Salvador; Barcelona/ES
  - P. M.A. van Ooijen; Groningen/NL
  - A. P. Parker; Bergen/NO

- A. Image quality optimisation in MRI: a radiographer’s perspective
  - M. Kiss; Miskolc/HU

- B. Fine tuning of image quality in computed tomography: the role of the radiographer
  - D. Pekarovic; Ljubljana/SI

- C. X-ray radiography: tips and tricks for high quality imaging on the frontline
  - E. Constantanegianni; Athens/GR

- Panel discussion: The importance of excellent images for advancing the quality of healthcare

**1 dose analytics: from data to decision**

A great deal of attention has been garnered from the media, medical community, patients and public about the risks associated with CT and mitigation of these risks. An offshoot of this focus has been a call for accountability for the number of medical imaging examinations, the amount of ionising radiation delivered to the patient, and the amount of radiation exposure from these examinations.

Programmatic radiation dose monitoring has emerged as a valuable tool for improving imaging and mitigating dose concerns. Dose-tracking software provides innovative solutions that can be deployed through large volumes of data seamlessly and provide meaningful results in a comprehensive layout with improved statistical certainty. This prompts their use in radiology departments as an objective basis for meaningful decision-making in terms of auditing the big data on doses for improving patient safety by protocol optimisation, scanner optimisation, and productivity, all of which have enormous personal and institutional implications.

In today’s presentation titled Big-data analytics and visualisation of a three-year CT radiation dose optimisation programme at an academic centre using radiation dose monitoring software given by Dr. Anushri Parakh, we aim to highlight the efforts of our team (director: Dr. Sebastian Schindera) at the University Hospital of Basel in reducing the CT radiation doses over a three-year period using radiography tracking software (R3TS).

We define CT dose management as the organisation of activities to review and optimise radiation doses to ensure patient safety. After forming a dedicated dose-team and standardising the nomenclature of protocols on all four of our scanners we tracked the doses using Radometrix (Bayar Healthcare) from 2012 to 2014. The results of this big data of doses are discussed in regular meetings and form the basis for systematic protocol optimisation, training of technologists, and even patient treatment in new dose efficient scanners.

As a result of our dose management initiative we achieved a reduction in the mean effective dose per CT scan by 25% from 2012 to 2014 (7.6 vs. 5.5 mSv). On comparing the median DLP between 2012 and 2014, there was a decrease from 1,250 to 700 mGycm for head (35% difference), from 245 to 81 mGycm for thorax (67% difference) and from 418 to 208 mGycm for abdomen-pelvis (52% difference). The median DLP decreased from 283 to 170 mGycm for the low-dose renal colic protocol and from 13a to 88 mGycm for pulmonary embolism protocol. Over the three-year optimisation programme we also achieved a more harmonised distribution of doses with a decrease in variability. A comprehensive organised dose-monitoring effort for CT can result in substantial dose reduction, however the process should be reviewed for optimisations, objects and operational components to be effective and efficient. We believe that medical imaging radiation dose monitoring proves to be a valuable tool for improvement decision making and care for the individual patient as well as for assessing and addressing the managerial aspects of CT practice.

**Scientific Session: Computer Applications**

Sunday, March 6, 14:00–15:30, Room Z

**SS1905 Quality control and safety issues in radiology**

Moderators: B. Salhab; Baveno/NL

P.M.A. van Ooijen; Groningen/NL

- Big-data analytics and visualisation of a three-year CT radiation dose optimisation programme at an academic centre using radiation dose monitoring
  - A. Parakh, A. Eusler; Schindera, Basel/CH

This session is part of the EuroSafe Imaging campaign.

**By Katharina Medzinská**
MR mammography screening project launched in Slovakia

The Slovak Radiological Society (SRS) is focusing on three major objectives in the coming period. During 2015, we started developing an initiative related to breast cancer screening in a group of high-risk patients with a proven or suspected risk of developing breast cancer. Based on recent medical studies and available publications, we decided to participate in the active investigation of breast cancer in high-risk women by using MR mammography. Our initiative is called SKRIMS, which is an acronym for MR Mammography Screening for Women with High Risk of Breast Cancer in Slovakia. In Slovakia, there are 2177 newly diagnosed cases of breast cancer each year, out of which about 3% of cases are women with a proven BRCA1/2 gene mutation. The goal of the project is to identify the high-risk women out of a total population of 8.2 million Slovak women between the ages of 25 and 60 years, based on models of risk quantification. This interdisciplinary project is being conducted with the Slovak Society of Clinical Genetics and specialists in gynaecology and oncology. The definition of the target groups of women with high risk of developing breast cancer in which MR mammography screening will bring benefits, are as follows:

- Genetic and confirmed mutations of BRCA1, BRCA2 genes and other genes predisposing to an increased risk of developing breast cancer (TP53, CHEK2, BARD1, PTFN and others)
- Unusual first-degree female relative in a known breast cancer mutation carrier
- A positive family history in accordance with HBOC syndrome and lifetime risk factor for developing breast cancer > 25%
- Radiation therapy to the chest area before reaching 30 years of age or eight or more years ago.

By examining 1% of women who wish to undergo genetic testing and intensify clinical follow-ups. Due to the fact that MR mammography is the most biologically relevant method for detecting breast cancer development with respect to radiological (mammographic) breast density, it should be performed according to our pilot project in yearly intervals. There are 16 MR centres in Slovakia with adequate technical equipment (MR scanner, bilateral breast coat) that can participate in the project. A standardised protocol, as well as a uniform method of evaluating findings (BI-RADS MR 2013), will be used in all participating centres in Slovakia. The challenge is in building the project with high-risk women, increasing the reliability of 'second-look' imaging and the histology of suspicious findings and central data collection and evaluation.

The second objective, in addition to the above mentioned project, is to improve healthcare and increase the level of diagnostic breast imaging. At the end of 2016, a six-month certified study programme Breast Imaging in Radiology was accredited at the medical Faculty of Comenius University in Bratislava. This programme is focused on the postgraduate study programme in radiology, which is compliant with the European curriculum of specialised training in radiology. The study programme is focused on the diagnostic and screening of breast cancer using digital mammography, breast ultrasound, interventional biopsy procedures of the breast and breast MRI. The conditions for inclusion in the certified training process are both specialisation in radiology and continuous performance of breast imaging with documented numbers of mammography ultrasound examinations and interventional procedures of the breast over the preceding three years. After successfully completing the stated and passing board exams, candidates obtain a diploma, which is evidence of their expertise in the subspecialty of breast imaging in radiology. The first graduates of this sub-specialisation study were certified in November 2015. A third important objective of the SRS in the coming year is establishing local diagnostic reference levels for paediatric CT examinations in children's hospitals in Slovakia based on the implementation of an EU methodology for their establishment. The results of this effort will be presented as a poster at the ECR in Cambridge, UK.
Once one focuses one’s attention should nonetheless be understood. in ultrasound, x-ray, CT and MRI, but calcifications and ossifications differs of colon cancer). The appearance of calc osteosarcoma, hepatic metastases toma, oligodendroglioma, juxta cortical-breast, thyroid cancer, retinoblas tumours (ductal carcinoma of the breast, head and neck, chest, spine, gastrointestinal and genitourinary imaging. Ten individual experts in their fields will provide you with clinical information and representative images of two cases and give you time to interactively answer specific questions concerning pathognomonic radiological signs and the most efficient algorithm to solve the patient’s problem. As in previous years, this could be your perfect way to finish five days of gaining and exchanging knowledge in so many different subspecialties of radiology.

Case-Based Diagnosis Training Special programme for residents and general radiologists
Sunday, March 6, 12:00–13:00, Room E1 CBDT I Case-Based Diagnosis Training – Part I
Moderators: K.M. Friedrich; Vienna/AT
S. Robinson; Vienna/AT
• Liver
L. Marti-Bonmatí; Valencia/ES
• Neuro
D. Prayer; Vienna/AT
• Maxillofacial
S. Robinson; Vienna/AT
• Musculoskeletal
F. Rainberger; Vienna/AT
• Breast
M.H. Fuchsjäger; Graz/AT

Sunday, March 6, 13:00–14:00, Room E1 CBDT II Case-Based Diagnosis Training – Part II
Moderators: K.M. Friedrich; Vienna/AT
S. Robinson; Vienna/AT
• Head and neck
C. Czemp; Vienna/AT
• Chest
H. Prosch; Vienna/AT
• Spine
K.M. Friedrich; Vienna/AT
• Gastrointestinal
F. Schima; Vienna/AT
• Genitourinary
M. Toepker; Vienna/AT

Do you know your calcifications?

As you may know by now, on the final day of the congress, ECR 2016 is a green meeting designed to meet environmental sustainability crite ria set by the Federal Ministry of Agriculture, Forestry and Water Management (Austria’s national eco-friendly certificate). It tries to protect the environment following those criteria to minimise pollution, use resources responsibly and reduce and separate waste. The local area should be affected as little as possible. Ourbodies should also be protected from unwelcome substances. Life-style has a big influence on our meta bolic situation. Reducing possibly hazardous nutrients will prevent ‘pollu tants’ in our bodies like pollution of the environment, as known from as from atherosclerosis or gout. Calci fications in the body are the topic of this year’s Case-Based Diagnosis Training interlude. Calcifications are amorphous accumulations of calcium salts in the body. When they are structured and display cortical and spongiotic parts, they are called ossifications. For example, with age, laryngeal and rib cartilage as well as vessel walls often display calcifi cations. Many calcifications are incidental findings without clinical significance and should be recognized as such (benign lesions). Calcium pyrophosphate deposition disease, gout, previous infections (fungus, tuberculosis, coxitis), certain habits (excessive sports with enthesis phenomena, broken, assault, tendon strains) or previous trauma (oil cysts).

Less common, but all the more important, are calcifications, which should alert one to malignant tumours (ductal carcinoma of the breast, thyroid cancer, retinoblas toma, oligodendroglioma, juxta cortical osteosarcoma, hepatic metastases of colon cancer). The appearance of calcifications and ossifications differ in ultrasound, x-ray, CT and MRI, but should nonetheless be understood. Once one focuses one’s attention on calcifications, one will see them everywhere! Come and enjoy some of the submissions from the global radiological community and learn more about it.

Before and after this interlude on calcifications, you can again update or deepen your knowledge in neuro, maxillofacial, musculoskeletal, liver, breast, head and neck, chest, spine, gastrointestinal and genitourinary imaging. Ten individual experts in their fields will provide you with clinical information and representative images of two cases and give you time to interactively answer specific questions concerning pathognomonic radiological signs and the most efficient algorithm to solve the patient’s problem. As in previous years, this could be your perfect way to finish five days of gaining and exchanging knowledge in so many different subspecialties of radiology.

Figure 1: A.p. chest x-ray of a 38-year-old female with crumbly calcifications in the left armpit due to powder deodorant.

Figure 2: Lateral x-ray of the cervical spine of a 27-year-old man shows a 4mm ossification superior to the superior horn of the thyroid cartilage called cartilago triticea (arrow), which is a normal variant.

ESOR Providing education worldwide 2016

Programmes outside Europe have been set up by ESOR to create educational links and exchange between the European Society of Radiology and national radiological societies worldwide. The educational programmes are delivered jointly by renowned European speakers and esteemed local lecturers in an effort to open up additional opportunities to exchange expertise and enhance scientific collaboration.

AIMS Mexico
Abdominal Oncologic Imaging
April 13, Mexico City
April 15, Monterrey

AIMS Korea
Advanced Thoracic Imaging
July 9, Seoul

AIMS Brazil
Advanced Oncologic Imaging
August 25–26, São Paulo

Visiting Professorship Programme Uzbekistan
Cardio-Thoracic and Abdominal Imaging
August 9, Tashkent/Uzbekistan
Tut orial aimed at radiologists from Central Asia
June 6–17, Astana/Kazakhstan

For further information on the detailed programmes and registration, please visit myESR.org/esar

BY SORAYA ROBINSON
ECR TODAY | SUNDAY, MARCH 6, 2016

#ECR2016
Mystery of left ventricular non-compaction: a challenge for cardiologists

Today it is obvious that the latest technical and scientific developments in imaging have changed approaches to diagnosis of many cardiac diseases. For example, 30 years ago nobody dreamed about non-invasive coronary angiography with CT or studies of myocardial perfusion with cardiac MRI. One of the first papers in this area is diagnostic in so-called left ventricular (LV) non-compaction or LV non-compacted cardiomyopathy (LVNC). In the 20th century, clinical diagnosis of this cardiac pathology was very difficult, and the disease was regarded as a very rare one. After recent radical changes in the image quality of echocardiography, cardiac MRI and CT, it has become obvious that in some cases these changes represent a severe pathology (true LVNC is regarded as a peculiar form of primary cardiomyopathy of unknown origin) but in many cases it can also be regarded as an anatomical variant of normal LV morphology or manifestation of LV hypertrophy due to a variety of ethnologies. So again, radiologists and cardiologists are facing the eternal problem of diagnostics: what is normal? In order to differentiate this severe disease, radiologists and cardiologists were in need of diagnostic criteria for LVNC. Several sets of LVNC diagnostic criteria have been suggested by different groups of authors. The two most well known diagnostic criteria were based on analysis of cardiac MRI datasets. The first variant of LVNC diagnostic criteria takes into account the difference in the thickness of compacted and non-compacted (NC) myocardial layers, while the more recent diagnostic criteria (A. Jaquie, M. Grothoff and co-authors) uses volumetric measurements of these layers. According to data from some studies, the method based on NC mass measurements showed a statistically significant relationship with occurrence of ventricular tachycardia/ventricular fibrillation and cardiac related hospitalisations in contrast to the method based on myocardial thickness ratio assessment. Therefore, identification and precise quantification of LV non-compacted myocardium has acquired a key importance. The manual approach to identification and detection of LV non-compaction uses sets of short-axis cine MR images. This approach is accurate and reliable, but it is quite time-consuming. Computer-assisted data analysis could be helpful but it needs clinical validation. To date several software packages and methodologies using semi-automated threshold segmentation approaches have been suggested. Our group, in the study presented at ECR 2016, presents the results of comparison between a dedicated software semi-automated package for cardiac MRI analysis and manual post-processing for quantification of myocardium layers in LVNC. The aim of the study was to evaluate the performance of these two approaches to image analysis taking into consideration their diagnostic performance, inter-operator variability and time costs. Moreover, }
In the emergency department a patient with polytrauma is a catalyst for multiple errors as well as serious complications for various reasons: inadequate history quick life-saving decisions, severity and complexity of the injuries or the patient’s pre-existing medical conditions, multiple concurrent tasks, and a multidisciplinary approach.

Plain radiographs are still the main imaging tool in the emergency department for detecting bone fractures in patients sustaining trauma. Two perpendicularly imaging views are the minimum requirements to visualise the injured site, even if imaging in two planes may not show non-displaced fractures. Failure to identify fractures is the most common diagnostic error, which may account for 41-80% of diagnostic errors in the emergency department.1

Missed or late diagnosis of skeletal injuries, especially those of the appendicular skeleton, statistically account for the majority of claims in radiography malpractice suits.2

In our presentation, we discuss the pitfalls in detection of LVNC. An important issue is differentiation between papillary muscles and pathological myocardial trabeculae during the LV-segmentation, since it could have significant influence on quantification of non-compacted mass. We have also studied the difference in approaches to differentiating between true LVNC cases and LV hypertrabeulation. We found that the semi-automated method with an innovative semi-automatic pixel-intensity-based trabeculation measurement approach seems to be advantageous in LVNC patients due to its high reproducibility reliability, and shorter time spent for image analysis in comparison with the manual one.

Previously published LVNC diagnostic criteria were based on manual tracing of trabeculae inside the NC layer. During the LVNC analysis, with the novel approach it became obvious that the diagnostic criteria for this disease should be significantly modified and improved. The reassessment of the cut-off values of NC mass criteria allows us to use this quick and highly reproducible method of LVNC quantification in clinical routine.

In general, we believe that automatic image analysis in cardiac radiology will bring forward new directions in diagnosis of many cardiovascular diseases, and LVNC is one of them.

Dr. Ekaterina Pershina is a radiologist at the Federal Center of Treatment and Rehabilitation, Moscow, Russia.

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References
That was certainly the goal of Toshiba’s engineers in designing the Infinix-i Rite Edition, with its ceiling-suspended C-arm that can be rotated at a speed of 80 degrees per second around the patient to any targeted anatomical region. The detector and the beam collimator are fully synchronised, and whatever angle is chosen for image acquisition, the image is automatically shown heads-up on the clinical display.

“We focus on patient comfort, so our philosophy is to move neither the patient nor the table, but the hardware,” noted René Degros, the company’s European x-ray business unit manager.

As interventional procedures become more complex, advanced 3D acquisition is becoming increasingly important, he pointed out. There is also an emphasis on flexible, responsive technology, so the C-arm’s lateral movement allows it to be moved out of the way during a procedure. During lung biopsies, for example, the unit can be flipped through 180 degrees to place the flat panel detector beneath the patient table.

The system is equipped with tableside controls to improve workflow. It also offers Toshiba’s DoseRite package, which includes a range of tools developed to reduce radiation exposure for both clinicians and patients, including the Live Zoom, RiteSpot, and real-time dose-tracking features.

A similar patient-centric approach influenced Siemens’ strategy in developing Multitom Rax, a twin robotic x-ray system. The technology has a broad range of potential applications in radiography, orthopaedics, angiography, fluoroscopy and trauma imaging. Indeed, the system is so versatile that it has been described as “radiology’s answer to the Swiss army knife” by clinicians and the full range of its potential applications is still to be explored. But there are clinical applications in which it already appears to have advantages over CT, notably in investigations of upper limb fractures in obese patients and weight-bearing lower-limb bone examinations of diabetics, he added.

Fujifilm staff are demonstrating a range of DR panel and image processing systems designed to improve workflow and patient outcomes. The company’s Virtual Image processing software can adapt contrast to improve image quality for exams acquired without a grid. While this processing has been available for some time for chest and abdominal examinations, it can now be used for all body parts, offering a potential workflow improvement for mobile imaging applications where the use of a physical grid is most challenging and can disrupt patient comfort.

Tests on phantoms have shown that the product offers comparable image quality at a 30-40% lower dose than with a physical grid, so the implications for dose reduction with this image-processing technology cannot be ignored, according to a company statement.

Carestream has also been seeking improvements in dual radiography-fluoroscopy technologies. Its DRX-Excel Plus system can perform contrast exams using fluoroscopy that can be associated with a radiography image, in addition to specialised procedures that record both fluoroscopy and radiography sequences.

The system offers a source-to-image detector distance of 180 cm, an ergonomic design, and an elevating table that tilts and can be lowered or raised to provide flexible, comfortable imaging for patients. In addition, it is presented with new detectors that are thinner and lighter than previous models, and offer higher detective quantum efficiency to enable improved image quality and lower dose. The newly designed detectors are also more robust than previous systems and the battery life has been significantly increased for greater productivity, the vendor states.

Enhanced workflow is the key goal of Samsung’s new S-Guide software.

BY JOHN BONNER

Industry re-positions digital x-ray to meet new clinical challenges

Imaging professionals need their equipment to be practical and adaptable, so the new digital x-ray technologies on display in the exhibition halls at ECR 2016 have been designed to produce high-quality diagnostic images across a range of clinical applications, while allowing the patient to maintain a comfortable (and dignified) posture.

“The precise positioning of the arms in all three planes makes the examination so much easier regardless of whether the patient is standing, sitting or lying down. Our strategy is based on the principle that the system moves, not the patient, which reduces the risk of additional injuries and pain,” explained François Nolte, head of the company’s x-ray products business line.

The machine can record static, dynamic and real-time 3D sequences, and the full range of its potential applications is still to be explored. But there are clinical applications in which it already appears to have advantages over CT, notably in investigations of upper limb fractures in obese patients and weight-bearing lower-limb bone examinations of diabetics, he added.

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Enhanced workflow is the key goal of Samsung’s new S-Guide software.
Using this technology, radiology staff can set optimal collimation area and auto exposure control remotely in the control room, without having to move into the examination room. It also reduces the frequency of retakes as the product identifies and corrects positioning of patients, which can be a particular problem in paediatric cases. The device also offers a novel bone suppression image enhancement feature, which reduces the prominence of bone structures and enhances soft-tissue imaging. This application is expected to be particularly valuable in investigating lung diseases, suggests the company.

Shimadzu is promoting the latest version of its digital radiography system, RADspeed Pro. The new EDGE version combines the ease of operation and radiation dose reduction features of the existing platform with a number of new features, according to the manufacturer. It now has a tomosynthesis function, allowing the generation of continuous cross-sectional images based on just one single tomographic scan. There is also dual-energy subtraction software for producing images of soft tissues and bone tissues, as well as an auto-stitching method for images covering the entire lower extremities or spine.

The emphasis of Philips’ researchers has been on developing technologies for improving diagnostic quality while eliminating inefficiencies when using mobile digital radiography systems at the patient’s bedside. The new SkyFlow scatter correction algorithm reduces the effect of scattered radiation for non-grid bedside chest exams, allowing the operator to obtain DR images with grid-like contrast, but avoiding the time and effort involved in attaching and detaching a grid.

On the GE Healthcare stand, its representatives are keen to discuss new evidence showing the clinical value of its long established digital tomosynthesis technology, VolumeRAD. A recently completed international multicentre clinical trial has demonstrated that the product offers improved detection and management of patients with lung nodules compared to conventional radiography – with a 7.5 times increase in sensitivity for nodules between 4 mm and 6 mm diameter compared with standard x-ray. The device is reportedly 3.6 times more sensitive than conventional two-view CXR, without decreased specificity of detection of small lung nodules in the range of 3–20 mm in diameter.
LUCA tackles the growing societal need for diagnosis and health care producing a novel, point-of-care, low-cost device for the screening of thyroid nodules. The project will combine two photonics systems, near-infrared diffuse correlation spectroscopy and time-resolved spectroscopy, with a multi-modal ultrasound system, to provide a proper overview, introduction and preparation in breast imaging. LUCA will enable multidimensional data acquisition for the screening of thyroid nodules for thyroid cancer.

The project, which is an initiative of the Photonics Public Private Partnership (www.photonics21.org), is led by ICF – The Institute of Photonics Sciences, Barcelona, Spain. The European Institute for Biomedical Imaging Research (EIBIR), Vienna, Austria supported LUCA in the proposal preparation phase and is now involved in LUCA as a partner for management and dissemination. Throughout the project, EIBIR will be responsible for dissemination activities, protocols, dissemination and exploitation plan within the project. LUCA brings together eight partner organisations from five different European countries. It is a multi-disciplinary project with clinical endocrinologists, radiologists (both end users), physicists, engineers and industry joining forces. Together with EIBIR, the partners from distinguished research organisations and small and medium-sized enterprises (SMEs) are enthusiastically pursuing their goal of improving the sensitivity and specificity of this process for thyroid nodules in malignant cancers making it superior to the conventional ultrasound-based workflow.

Thyroid nodules are a common pathology having a prevalence of palpable nodules of around 5% in women and 1% in men, which increases to 15-70% with the use of neck ultrasound. To exclude thyroid cancer when screening thyroid nodules, which occurs in 0-1% of thyroid nodules, the first step is ultrasound followed by fine-needle aspiration biopsy of suspicious nodules. In thyroid cancer, the sensitivity and specificity of this process are limited, with a large number of non-diagnostic and false positive results that lead to unnecessary surgery. A reduction in the number of surgical procedures with a point-of-care diagnostic procedure would have an important socio-economic impact, diminishing the number of thyroidectomies and the associated morbidity. This implies savings of millions of euros per year. Evidence shows that multimodal approaches that include haemodynamic information lead to better specificity while each modality on its own fails. The LUCA partners are convinced that a new optical-ultrasound probe and integrated system enabled by the development of novel, key enabling photonics components and sub-systems to provide synergistic information on tissue morphology, composition and function will have a large impact in this field.

Phase I of the project, with a duration of 24 months, will be focused on the development and construction of components and subsystems, with activities ranging from hardware and software development to the preparation of project structures, protocols, dissemination and exploitation materials and studies to the clinical protocols.

LUCA is directed by end-users who are also participating in the project and LUCA’s results will be exploited by the industrial partners who cover the whole value-chain.

This ambitious four-year project officially commenced on February 1, 2016 and the consortium met at the kick-off meeting in Vienna, Austria, on February 22, 2016. The meeting and the first few weeks of the project were successfully used to define the first steps of the project, as well as the specifications for the development of each project component. Further details on the project will become available soon.

Please have a look at our website www.eibir.org for updates on LUCA and other EIBIR projects and pay a visit to the EIBIR booth in the entrance hall.
At the kick-off meeting at ECR 2016, 20 young radiologists from all over the world discussed their ideas and projects. Throughout the whole congress, lunch breaks, a group of experts shared their knowledge with the EYC and all the interested attendees at the EUSOBI booth. Due to last year’s success this expert talk T26A is being held again at ECR 2016 at the EUSOBI booth during lunch breaks from Wednesday to Sunday (Friday excluded).

In the first year of the EYC, we introduced the official EUSOBI Facebook page. The page contains news about what’s going on in the society and in the breast imaging community, and already has more than 300 likes. The purpose of the FB page is to facilitate communication between young members, and to provide an easy access platform for other young imagers/researchers interested in this initiative. We are currently working on the EUSOBI website, in order to create a section dedicated to learning, literature updates and Q & A with the experts.

The EYC also aims at increasing the awareness of breast cancer. To achieve this goal a survey on breast screening awareness has been distributed to residents in medical universities to gain insights into the level of awareness regarding breast cancer in the medical environment. With the upcoming International Day of Radiotherapy, EUSOBI would like to raise breast imaging’s visibility to be a means not only to exchange information between specialists but also to facilitate increased and unbiased information for women.

To support medical doctors and young radiologists interested and involved in breast imaging research, the EYC awards the best graduation and post-graduation thesis on breast imaging granting the winners free participation in the Annual Meeting. The first awards were presented last year at the EUSOBI Annual Meeting in London. The EYC will also promote educational (Basics in Breast Imaging) and scientific (ECR, EUSOBI: Education for Research) courses, either free of charge or with discounted fees for members of the EYC.

For those who might be interested in the EYC and its initiatives, the group welcomes all medical and PhD students, residents, young radiologists, nuclear medicine physicians and radiation therapists (up to the age of 35) with an interest in research in breast imaging.

You can find more information on the Facebook page (www.facebook.com/eusobiyoungclub) or on the EUSOBI website (www.eusobi.org) and by email (youngeclu@eusobi.org).

**Revision of the EU medical devices legislation—eight years and counting**

BY FLORIAN DEMUTH

The revision of EU legislation on medical devices has been eight years in the making since the European Commission (EC) launched a public consultation to revise Council Directive 93/42/EEC concerning medical devices in May 2008. It looks like 2016 may be the year that this important piece of legislation will finally be adopted.

Following a lengthy parliamentary process and more than one and a half years of negotiations within the EU Council, the legislative process entered its final phase when the EU Council agreed on an agenda approach in October 2015, and trilogue negotiations (informal three-way discussions) among the EU institutions were initiated thereafter. During these negotiations, there were divergences as well as revisions to the Commission’s legislative proposal, painstakingly hammered out within the European Parliament and EU Council, now being consolidated into a final text for the regulation – and on several key issues pronounced differences between the institutions persist. A fact acknowledged by the rapporteur for the medical devices regulation, Glacios Willmott.

These differences include new rules for the designation and monitoring of notified bodies, the ‘compliance’ procedure for high-risk devices, the introduction of special notified bodies (proposed by the Parliament, not taken up by the Council), reprocessing of single-use devices, post-market surveillance (mandatory) liability insurance, classification rules, and the Council proposal for the introduction of unique device identifications to be registered at a central database to ensure traceability.

Questions regarding the implementation of the regulation have also arisen, in particular with regard to the delegated and implementing acts (secondary legislation by the European Commission) needed to define, clarify and put into practice the parts of the regulation. The Commission has proposed more than 70 such acts, raising concerns that it may have too broad a mandate in implementing the law, which may affect the stability and predictability of the new legal framework.

Overall, the Council’s approach is closer to the European Commission’s original legislative proposal than the resolution adopted by the European Parliament, and these positions now have to be reconciled. However, with the lack of agreement on so many crucial points, progress in the trilogue negotiations appears slow, and it is not at all certain that agreement can be reached during the Dutch Council Presidency in the first six months of 2016.

Several interested stakeholders have reacted to the start of the trilogue. Industry group COCIR (European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry) welcomed the Council position of strengthening notified bodies’ performance while limiting the proposed scrutiny procedure to implantable Class III (high-risk) devices. COCIR also expressed caution regarding reporting requirements and urged EU institutions to clarify requirements on clinical data and investigations as well as software as a medical device.

Similarly, EUcomed, representing the medical technology industry in Europe, is wary of the scrutiny mechanism, which it deems redundant given other regulatory improvements. It calls on the EU to ensure rules on clinical evidence are straightforward and scientifically sound, and cautions against unjustified reclassifications of medical devices. As for the reprocessing of single-use devices, EUcomed has expressed support for the Commission’s original proposal of a harmonised standard that also applies to hospitals and subcontractors.

The European Patients Forum (EFP) has primarily criticised the lack of patient involvement in the governance of medical devices. In their recommendations for the trilogue, the EFP specifically urges mandatory patient involvement in bodies such as ethics committees and expert panels to monitor high-risk devices. It also strongly supports the introduction of special notified bodies designated by the European Medicines Agency, and calls for better information and more transparency for patients.

It is hard to say how long the trilogue negotiations on the medical devices regulation will last or which course they will take, particularly since in such a process typically nothing is agreed until everything is agreed. Unexpected shifts in position or surprising compromises are very real possibility. Given the polarised discussions in the European Parliament initsu and the diverging positions among member states that emerged in 2015, negotiations will have to be creative in finding a resolution to this legislative dossier that can command broad support.
Medical imaging equipment replacement in Europe – essential and long overdue

BY NICOLE DENJOY

The role of medical technology is of critical importance in societies facing healthcare budget constraints, the challenges of ageing populations, the rise in chronic diseases and the shortage of qualified healthcare professionals.

Innovative medical imaging technologies, such as CT, MRI, molecular imaging positron emission tomography (PET), X-ray, ultrasound and IT-supported processes, have proven their ability to enhance the efficiency of medical care and clinical outcomes.

Every year, advances in engineering and processing provide incremental gains and an occasional major breakthrough like low-dose CT, revolutionising image capture and quality with a greatly reduced radiation dose to the patient. These gains deliver better accuracy, specificity and patient benefits that extend the utility of medical imaging equipment within a healthcare system can be considered significant factors in retaining these benefits.

However, such benefits reach patient benefits afforded by both innovative medical imaging equipment within a healthcare system can be considered significant factors in retaining these benefits.

Innocent medical imaging technologies, such as CT, MRI, molecular imaging positron emission tomography (PET), X-ray, ultrasound and IT-supported processes, have proven their ability to enhance the efficiency of medical care and clinical outcomes.

ECR TODAY | SUNDAY, MARCH 6, 2016

The highest levels of non-upgradeable CT systems were found in Poland, Germany, Italy and Spain. Perhaps the most concerning issue for Italy and Spain over recent years has been the constant deterioration in the age profile of their diagnostic imaging installed base.

COCIR is the COCIR Secretary General.

Based on these findings, COCIR urges governments to prioritise dose reduction and optimisation when replacing aging CT equipment in order to assure adherence to the ALARA principle.

COCIR expects healthcare providers to invest in new and replacement low-dose CT technology throughout Europe. Regarding the potential for upgrading the current installed base, COCIR undertook a review of its vendor market intelligence, which revealed that a quarter of the European CT installed base cannot be upgraded with these important dose-saving technologies.

In essence, 27% of the CT installed base, approximately equivalent to 2,500 units in western Europe and 500 units in eastern Europe should therefore be considered inadequate from a radiation safety perspective, and should be considered for replacement.

COCIR expects governments to prioritise dose reduction and optimisation when replacing aging CT equipment in order to assure adherence to the ALARA principle.

Nicole Denjoy is the COCIR Secretary General.

Recommendations:

- Based on these findings, COCIR urges healthcare stakeholders to put greater emphasis on a sustainable age profile of medical imaging equipment.
- Governments are urged to invest in healthcare, to encourage the uptake of innovative technology and solutions that can help transform the delivery of care.
- COCIR expects healthcare providers to prioritise dose reduction and optimisation when replacing aging CT equipment in order to assure adherence to the ALARA principle.
Acute ischaemic stroke treatment in Latvia

The roots of the Latvian Society of Radiology can be traced back to 1926. Today, we represent 250 members from diagnostic radiology, interventional radiology, nuclear medicine and therapeutic radiology. Maija Radzina, MD, PhD has served as president since 2015. Current scientific activities in Latvia are dedicated to vascular imaging for abdominal aorta aneurysm endovascular treatment, abdominal imaging in oncology patients, neuroradiology in stroke, oncology, neurodegenerative diseases, toxicology and dementia, interventional radiology in arteriovenous malformations, aneurysms, stroke and oncology, as well as ultrasound with contrast-enhanced examinations (CEUS) and elastography.

This paper is also focused on our experience in acute stroke imaging and treatment in Latvia. The incidence of stroke in Latvia is 395 cases per 100,000 population compared to 173-206 cases per 100,000 population in Western Europe 1. Nowadays, reperfusion treatment of acute ischaemic stroke includes not only intravenous thrombolysis (TL), but also mechanical thrombectomy (MT). Our country was one of the first in the Baltic region to perform thrombectomy procedures.

We opened a stroke unit in 2009 at Paula Stradiņa Clinical University Hospital, which became the educational and reference centre for neighbouring countries. Since then, we have treated 5,300 patients with hypertensive ischaemic stroke 480 patients received intravenous thrombolysis and 338 thrombectomy. Since 2014, we have been combining both treatment methods for selected patients (97 patients so far).

Routine imaging protocols for patient selection include multimodal CT examinations – unenhanced brain, CT angiography for head and neck, and CT brain perfusion – to evaluate brain tissue viability, differentiation of core and penumbral lesions, as well as vascular anatomy; occlusion site and collaterals.

MRI imaging is not available 24/7 and is performed if CT findings do not correlate with clinical findings. MRI is available 24/7 in acute stroke patients if the patient is transferred to hospital within 12 hours of symptom onset. MR venography, MR angiography and MR perfusion are performed in 24 hours.

Figure 1: Multidisciplinary stroke team: diagnostic and interventional radiologists along with neurologists in Paula Stradiņa Clinical University Hospital. From left: Karolīna Kupīša, Evija Miglone, Maija Radzina, Arturs Balodis, Helmutis Kidikas, Janis Šāvlovskis, Andris Veiss.

Figure 2: Multidisciplinary stroke team: diagnostic and interventional radiologists from the Latvian Radiologists Association. (Images provided by Prof. Algirdas Basevicius)
of or imaging radiation should be avoided. The intravenous thrombolysis is the first-line treatment up to 4.5 hours after the onset of symptoms, while mechanical thrombectomy has a wider treatment window—within six hours for anterior circulation and 24 hours for posterior circulation. A multidisciplinary team—one or two interventional radiologists and neurologists—is available in hospitals 24 hours a day, 7 days a week. We have performed several scientific studies for patient eligibility criteria and evaluation of our treatment efficacy. We use the following imaging-based selection criteria for active stroke treatment: t(ASPECTS) >6 and tissue viability for active treatment: stroke size imaging-based selection criteria for the first few hours after onset, which are assessed most precisely by perfusion examination, as well as collateral status and occlusion location on CT angiography based on our study results.2

We have recently published results of a comparative study between thrombectomy and thrombolysis in patients with large artery occlusion. Early and recent results show neurological improvement and a successful recanalisation rate in 90% of the treated patients with latest thrombectomy stent retriever devices during digital subtraction angiography (Figure 3). Our patients reach statistically significant and favourable functional outcome in 90 days (modified Rankin scale 0–2) in 67% for the TE group versus 36% for the TL group (p<0.05) with equal complication rates, including symptomatic haemorrhage.3

We believe the key to success is individual assessment of acute stroke patients—taking into consideration neurological impairment severity, comorbidities, anatomical variations, multiparametric imaging findings, technical possibilities and contraindication for each reperfusion treatment modality. The decision should then be made by an experienced multidisciplinary team (Figure 2).

Radiology is a very dynamic specialty in Serbia and has gone through significant changes over the last 20 years, which reflects the demands of modern society and necessities in radiology. The ultimate aim of Serbian radiologists is to provide state-of-the-art clinical imaging that is a good base for further clinical decision-making and serves the best interests of our patients.

For this reason, special attention is paid to education. The Serbian training curriculum in radiology has been harmonised with the European Training Curriculum for Radiology and consists of core modules followed by subspecialty training, which is optional and depends mainly on the needs of the home institution, as well as personal preferences. If these can be combined, further education in academia can include doctoral studies, which are in line with standards of the Organisation for PhD Education in Biomedicine and Health Sciences in the European System (ORBHEUS). For continuing medical education, courses are held internally at the home institution, or external activities such as meetings, papers and lectures, presentations are organised. Unfortunately, online courses have not been recognised for these purposes yet, which is drawing increasing attention from radiologists as participation at meetings is more difficult due to financial constraints. European Credit Transfer System (ECTS) points are summed up on an annual basis and are necessary not only for getting a medical licence but also for extending its validity for a period of seven years.

Research activities can be accomplished within projects supported by the Ministry of Education, Science and Technology Development or international projects. However, no time is allocated to research activities during regular working hours and therefore, they have to be performed during free time and, in some cases, require personal funding.

Special attention is paid to the procurement of equipment. Public procurement is centralised in cases where the Ministry of Health provides the sources, or is decentralised when the financial sources are provided by the budget of a hospital. Technical specifications are written by a working group that includes, among others, a radiologist or a senior radiology technologist. The final decision is made based on the lowest price, not the most economically advantageous tender (MEAT) rules. Despite all the efforts to provide modern equipment, the majority of it is quite old, with no regular maintenance and no plan for medical imaging equipment upgrades or replacement. For this equipment, maintenance is expensive or impossible, and there is a risk of failure and breakdown. All these issues could ultimately lead to poor quality of information, possible diagnostic errors and delays to diagnosis and treatment.

The position of radiologists in Serbia has improved, but there is still a substantial brain drain. Although the main reason is inadequate financial compensation, other reasons include better working conditions in other countries, more benefits, opportunity for advanced training, and a fairer system of promotion. It is believed that the staff shortage can be solved if the financial compensation is adjusted accordingly. The time being, the shortage of staff is being tackled by involving residents in medical duties and training, as final-year residents can perform tasks similar to those of junior radiologists.

All these issues were addressed during the biannual national congress of the SSR in November 2015.

References

Prof. Luiz Donoso Bach, ESR President, presented options for further education of residents and radiologists during the biannual national congress of the SSR in November 2015.

Dr. Maija Radziņa, Dr. Kārlis Kopcs, Dr. Arturs Balodis, Dr. Helmuts Kukšis, Dr. Kārlis Balodis and Dr. Anda Veisi are all work at the Diagnostic Radiology Institute at Paules Stradiņa Clinical University Hospital in Riga, Latvia.

Prof. Ružica Maksimović is President of the Serbian Society of Radiology.
European Congress of Radiology
ECR 2017
VIENNA
MARCH 1–5
THE FLOWER GARDENS of RADIOLOGY
the annual meeting of
ECR Today spoke with the incoming ESR/ECR President, Prof. Paul M. Parizel, from Antwerp, Belgium, to learn about this new position, his vision for the society and his ideas for its future.

ECR Today: You are the first officer of the European Society of Radiology to take on the new position of combined ESR/ECR President. Could you please briefly explain to our readers how this came about?

Prof. Paul M. Parizel: It is a great honour, and also a huge responsibility, to become this new position of combined ESR/ECR President. The ESR is one of the most important and prestigious international scientific societies, with more than 60,000 members throughout the world. The ECR is well established as the foremost congress in radiology in Europe. Until a few years ago, nominations and elections for the council honour of the ECR and ESR were made independently of each other. This implies that we have not had the benefit of presidents of our society, who never became president of the congress, and vice versa. As both the congress and the ESR were getting bigger, and more mature, it was decided to re-evaluate and restructure the strategy plan and to change the statutes so that appointments were fully integrated, instead of running on parallel tracks, as was previously the case. Bringing the congress and the society under one umbrella is an efficient way to better utilise our resources (human, political and financial). I am convinced that this will improve communication with our members, enhance our international standing and facilitate relationships with other societies and with the industry.

The combined ESR/ECR presidency is certainly a daunting task, and I admit that I am a bit nervous. On the other hand, I can rely on the work of my predecessors and on the creative input and unflagging energy of my friends and colleagues of the Board of Directors, the Executive Council, the statutory committees, subcommittees, working groups, and, last but not least, the experience, professionalism and efficiency of the ESR staff. Our society is healthy, both politically and financially, and we are steering a stable and steady course.

ECRT: One of your tasks is chairing the ECR Programme Planning Committee, which means together with your team you are in charge of the scientific programmes of ECR 2017. How is the Programme Planning Committee composed and how often do you meet?

Prof. E. Parizel: The ECR Programme Planning Committee (PPC) consists of six persons: the Chairperson of the committee (who will be President at the time of the congress), the Deputy Chairperson (who will be President, one Ordinary Member (the preceding congress), the Executive Director of the ESR, the Chairperson of the Finance and Internal Affairs Committee and the Chairperson of the Education Committee. It has three large subdivisions: the Postgraduate Educational Programme Subcommittees (chaired by Prof. Hans-Ulrich Kauczor; and containing 12 members), the Scientific Papers Subcommittees (chaired by Prof. Boris Brkljačić; and comprising seven members); and the Section Coordinators (17 members). Our PPC for ECR 2017 is carefully composed with bright and talented individuals of different ages and backgrounds, representing many nationalities and specific areas of expertise and knowledge. Of all duties as ESR/ECR President, chairing the PPC is one of the most pleasant duties. We first met in an inaugural meeting in February 2015. Further dedicated meetings are organised by working groups, based on the different schedules. Our meetings are true brainstorming sessions, and many concepts and new ideas are formed around the table.

I consider it a privilege and an honour to lead this group, and I often feel like the conductor of a symphonic orchestra, working together with all the musicians towards improving and fine-tuning our great symphony, which will be ECR 2017.

ECRT: What will be the highlights of ECR 2017? It is hard to predict on an individual basis, because the ECR 2017 PPC is committed to bringing something for everyone. The European Congress on Education (E3) ECR Academies will include sessions on spinal imaging (combined neuroradiological/musculoskeletal approach), abdominal imaging, ultrasound, and, last but not least, interactive Teaching Sessions. Other PPC highlights include The Beauty of Basic Knowledge, the Future of Education, and the European Diploma PreP Sessions.

In addition, as President, I hope that ECR 2017 will also be remembered for the grand opening ceremony, the honorary lectures, the social events, and most of all for the spirit of friendship and conviviality.

The essence of the ECR is to provide a platform where high quality scientific and educational content goes hand in hand with professional contacts and networking. Radiology is currently undergoing a metamorphosis, and a lot of attention has been focused on functional, biological, and genetics-related imaging. However, we should not forget that the mainstay of radiology is still anatomical imaging, and that one should learn to walk before one can run. This notwithstanding, we must provide information about cutting edge techniques to our readers, but also understand that they should not be afraid of innovations, but rather find a way to adopt these techniques to explore new diagnostic pathways and improve existing workflows. Radiology is not only about detecting lesions and offering a differential diagnosis but also about understanding how the human body works, how lesions arise and behave, and how we can monitor and influence disease processes using radiological techniques and image-guided interventions.

ECRT: Which countries will be invited to participate in the ESR meets programme? Do you already know anything about their plans for the sessions?

Prof. E. Parizel: The ESR meets sessions aim to provide a special opportunity to the invited country’s radiological community to present one main topic, which is of special importance to the respective country, and apply it also to other attendees, and at the same time to provide a flavour of the invited country through interactions between the lectures. For ECR 2017 we have invited the USA, Peru and Belgium as our esteemed guest countries.

ECRT: Could you please briefly explain to our readers how this came about?

Prof. Paul M. Parizel, chairman of Antwerp University Hospital’s department of radiology and full professor of radiology at the University of Antwerp’s faculty of medicine, is the incoming ESR/ECR President.

Which collaborations are planned for ECR 2017?

Prof. E. Parizel: For ECR 2017 we shall have a joint session with the European Union of Medical Specialists (UEMS). The purpose of this ECR/UEMS joint session is to provide information about topics such as continuing medical education (CME), accreditation and certification. These are important subjects for young and old, for recently qualified radiologists as well as for established practitioners. Recently the ESR has established the Accreditation Council in Imaging (ACI), in collaboration with the EACCME/UEMS; this body will be responsible for accrediting radiological events, e-learning and other relevant sources of CME in Europe.

ECRT: The ESR has been drawing an increasing number of young members to its delegations; about one quarter of participants at recent ECRs have been students and trainees. How will this be reflected in next year’s scientific programme?

Prof. E. Parizel: As you correctly observed, the mean age of ECR participants has been decreasing steadily, and this evolution has been going on for more than ten years. Therefore, I have made a central theme of the congress ECR 2017 will be dedicated

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An exclusive interview with the incoming ESR/ECR President

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to YOUTH, the Jugend, la juventud, la giovinezza, a deviant youth? It is my intention to bring this message to young radiologists, throughout Europe and across the world. The scientific programme will reflect this focus on a new generation in radiology: there will be more interactive sessions, a more prominent role for social media, and we will have topics that are of interest to young people, because after all, they are the future of our profession.

ECRT: For many radiographers throughout Europe, the ECR is the main scientific meeting of the year. What will be the main issues for radiographers at the next ECR?

PMP: Much more than other disciplines and specialties in medicine, radiology is teamwork. The team consists of certified radiologists, residents/registrars in training, radiographers, nurses, physicists, technical support staff, managers, etc. The quality of our performance depends on the strength of the entire team. This is why I am so happy that the ECR collaborates closely with radiographers, and the scientific programme for 2017 will reflect this growing symbiotic relationship. A big challenge we have is to make sure that we reach our target audience, because there are huge differences across Europe in the definition of the profession. There are even huge differences in the name that the practitioners of that profession use: radiographers, technologists, radiology technicians, imagers, etc. But we have developed strong and positive collaborations and you will see a bigger input in the scientific programme in ECR 2017 and in coming years.

ECRT: Since 2011, the European Diploma in Radiology (EDIR) examination has been an important event at the ECR. Would you care to share your personal opinion about the significance of the EDIR? What are its advantages and why should young radiologists take it?

PMP: The European Diploma in Radiology (EDIR) was created to establish a standard of radiological knowledge for the independent practice of general radiology. A few years ago, the ESR defined the body of knowledge, as laid out in the ESR European Training Curriculum for Radiology. If we want our specialty to continue to grow and blossom, such an objective test of knowledge is necessary. In this respect, the EDIR examination represents a significant step forward in transnational harmonisation of radiological standards throughout Europe. I would strongly advise radiologists and radiology residents in their fifth year of training, to participate in this examination. Today and even more so in the future, the EDIR will be an important element for career development and job applications. Moreover, in the context of patient migration, it will be easier for a radiologist who has successfully passed the EDIR to use this document as proof of training, and thus hopefully facilitate procedures to apply for work in another country. Finally, and this is important, the EDIR does not replace any national board certificate, except in Poland, where they have decided to consider the EDIR as equivalent to the Polish Exit Training Examination, and in Turkey where the EDIR is equivalent to the first part of the Turkish Board Examination, but should be seen as an added value with an international dimension. It is a giant step forward in the European integration of our profession, and it serves as a quality check.

ECRT: You have been actively involved in the creation of the poster for ECR 2017, which features a stylised skull covered in flowers. How did you choose this particular subject and what does it convey to you?

PMP: The answer to this question is simple and straightforward: the skull contains the brain, and this symbol reflects my interest in neuro-radiology. The colourful flowers are a metaphor for youth, for spring, for a new dawn, and for a new generation in radiology. With this eye-catching poster, I want to invite our colleagues to join me in exploring the beautiful and fragrant flower gardens of radiology.

Radio buttons or checkboxes indicate the number of correct answers expressed as a percentage. Multiple answer options may be selected. In all tests, five attempts are allowed. Some modules have been accredited with e-CME credits by the Austrian Medical Association. More are coming soon!

To obtain your e-CME certificate, you have to pass all questionnaires in one module (with a minimum score of 65% in each). After passing all questionnaires, an evaluation sheet will pop up on the right side of the module. You must fill out the evaluation sheet, afterwards you can view and download your certificate (under ‘MyProfile’ > ‘MyCertificates’).

The following European countries accept and recognise the Austrian e-CME accreditation: Austria, Albania, Bulgaria, Cyprus, Estonia, Germany, Ireland, Israel, Italy, Lithuania, Netherlands, Poland, Romania, Slovakia, Switzerland, Turkey and the United Kingdom. If your country is not included in this list, it may be because they have a different system or no mandatory CME at all. For more information, please consult your national jurisdiction.

Our eLearning team is constantly working on the improvement and expansion of the platform.
ESR and partner on medical radiation protection onto Europe’s research agenda

An important part of EuroSafe Imaging’s mission is to promote research in medical radiation protection and contribute to shaping the European research agenda. The European Society of Radiology (ESR) recently achieved a milestone in this regard by becoming a member of the Multidisciplinary European Low-Dose Initiative (MELODI), an organisation promoting radiation protection research.

Previously the cooperation with MELODI had been governed by a Memorandum of Understanding agreed in 2014, but the ESR accepted in 2015 allows the ESR to become an integral, long-term partner in shaping the European radiation protection landscape. Prof. Guy Frijia, member of the ESR Radiation Protection Subcommittee, was elected as a member to the MELODI board to represent the interests of the medical community.

Throughout 2015, the ESR and other medical associations – the European Federation of Radiographer Societies (EFRS), the European Federation of Organizations in Medical Physics (EFOMP), the European Association of Nuclear Medicine (EANM) and the European Society for Radiotherapy and Oncology (ESTRO) – have been working to develop a strategic research agenda (SRA) for medical radiation protection. Prof. Guy Frijia, member of the ESR Radiation Protection Subcommittee, was elected as a member to the MELODI board to represent the interests of the medical community.

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The first version of the SRA for medical radiation protection has been reviewed and approved by all medical societies involved. The final draft version, which will be circulated soon, will be the first time that the medical community has reached a consensus on a joint approach. This unity will help to ensure greater visibility in radiation protection research and opportunities for funding in future research programmes, which represents a major success for the medical community.

The logical next step following the finalisation of the SRA is the establishment of an independent medical platform, modelled after existing research platforms such as MELODI or European Radiation Dosimetry Group (EURADOS). To that end, a steering committee was set up, consisting of representatives of the five medical associations, to prepare a draft concept for consideration by the boards of the associations. There may be an opportunity for EIBIR, the ESR’s European Institute for Biomedical Imaging Research, to provide management services to a future platform. The aim of this endeavour is to have more visibility and collaboration with the nuclear sector, to keep the SRA for medical radiation protection updated, and to ensure medical radiation protection research remains on the EU’s research agenda.

The European Commission published the Horizon 2020 call NFRP-9 – Impacts of low-dose radiation exposure which comes at a very opportune moment for the intensifying cooperation between the medical societies, as several topics lobbied for by the ESR, such as a coding system for medical imaging, a repository for dosimetry data, and biobanking infrastructure, will be highly competitive, which is why the ESR has taken the initiative and suggested the five medical societies join forces and submit a single application under EIBIR’s management.

2015 was a very encouraging year for medical radiation protection research as the medical community came together, joined forces with the influential MELODI platform, and agreed on a joint strategic approach. Having laid the groundwork, all involved stakeholders now have to build on this foundation and continue to intensify their cooperation to reap the benefits and take medical radiation protection research to the next level.
Portuguese radiology society builds close links with wide range of nations

In Portugal, the Portuguese Society of Radiology and Nuclear Medicine (SPRMN) has the primary responsibility of fostering post-graduate medical education in radiology, and establishing institutional links with other medical societies or associations, in order to coordinate a strategy of delivering advanced education in radiology. This is in the case with the ESR, for whom the SPRMN is the natural partner in Portugal, appointing delegates to several ESR committees and sub-committees.

The SPRMN has close links to the radiological communities in Portuguese-speaking countries like Brazil, Angola, Mozambique, Guinea-Bissau, Cape Verde and Timor & Principe, covering a population of more than 350 million people and in many instances sharing delegations in joint initiatives. In Europe, we have established agreements and partnerships with other scientific societies, and the Spanish Society of Radiology (SERAM) is perhaps the best example of this fruitful cooperation.

At home, we are strongly committed to providing sound education and, with this aim in mind, more than a dozen well-known and reputed international radiological meetings have taken place in Portugal, organised by the SPRMN or under its auspices, hosted by organisations such as the Cardiovascular and Interventional Radiological Society of Europe (CIRSE), the European School of Radiology (ESOR), ERASMUS, The European Society of Head and Neck Radiology (ESHN), European Society of Gastrointestinal and Abdominal Radiology, etc, in the recent past. Portuguese residents are now strongly connected with the SPRMN after the creation of the School of SPRMN, which hosts an annual case-based workshops that have proved to be quite popular. The SPRMN works closely together with the national medical board of Portugal (Ordem dos Médicos) and its radiological division, in order to discuss and follow political changes that may impact postgraduate curricula. In this regard, Portugal is on the verge of adopting the European Training Curriculum for Radiology developed by the ESR, aiming at a 3+2 structure and allowing earlier immersion in a more subspecialised professional environment.

We are quite confident that the future of radiology in Portugal will be kept at high professional levels, providing the best standard of care.

By Maja Marolt Mušič and Dimitrij Kuheč

Young radiologists highly active in Slovenian radiology events

At the beginning of 2015 the Slovenian Association of Radiology (SAR) lost one of its most prominent members, Prof. Vladimir Jevtič, an internationally respected musculoskeletal radiologist and a dear colleague. The beginning of the year also brought elections in the Slovenian Association of Radiology, establishing Dr. Maja Marolt Mušič as president of SAR, Dr. Vladka Salapura as vice-president and Katarina Ana Kuhelj, MD, PhD, is councillor to the National Council of Slovenia and past-president of SAR.

During ECR 2015, the 7th Slovenian Evening gathered a majority of congress participants involved in Slovenian radiology. As always, it was an outstanding professional and social event, allowing participants to share their experience and discuss challenges in Slovenian radiology.

Younger members of SAR, mostly residents, were particularly active during the Croatian, Hungarian and Slovakian Symposium that was held in a charming spa resort in Heviz, Hungary. Delegates from member countries presented their experience in a warm and friendly atmosphere and many new contacts were established, probably representing the beginning of long-term cooperation.

There has traditionally been good cooperation with members of Radiological Society of Serbia, sharing experiences in professional schools and the Serbian Congress of Radiology.

As always, the International Day of Radiology was commemorated this year with a meeting devoted to paediatric radiology.

December was also quite busy for SAR members, since the regional MR School was held in Ljubljana with more than 120 registered participants. Experts from Slovenia, Croatia, Serbia, Bosnia and Herzegovina and Austria shared their knowledge with participants, and despite the dense programme, the lecture hall was constantly busy.
There are a great number of online educational resources available, but how do you choose which ones to trust? Where can medical students, radiology trainees or consultants find online tutorials, radiology cases or high quality images? Please read below the discussion with the ESR’s eLearning editor Prof. Mario Maas, who also shares his views about the use of social media for radiology education and the integration of e-learning resources into the training curriculum.

Part 2: eLearning and Online Education

We are confronted with so many different platforms, and I believe that your target audience will change accordingly. With changing audiences, different aspects concerning privacy are required. Some images or cases are so rare that they cannot be anonymised.

ECRT: Well structured eLearning resources can be integrated well into undergraduate as well as postgraduate teaching and may ultimately make more efficient use of limited resources and teachers’ time. How difficult is it to write tutorials that are suited to the needs of limited resources and teachers’ time? Are there any helpful software or advice freely available that you would recommend to teachers who would like to try this out?

MM: We have a history of developing eLearning for various levels of expertise, both in undergraduate and postgraduate teaching. We aim to provide radiological eLearning in undergraduate teaching both anatomical and pathological correlated. In postgraduate teaching, the clinical relevance of radiological signs is stressed more. We also aim to teach the postgraduate non-radiologist the basic radiological skills that are needed for daily practice but which are not taught thoroughly in medical school. The fact that radiology is almost never a key feature of medical school curricula gives rise to the need for such radiology-based postgraduate teaching for non-radiologists.

Interview conducted by Dr. Christiane Nyhsen, consultant radiologist at Sunderland Royal Hospital, UK, and former chairperson of the ESR Radiology Trainees Forum.
ALWAYS, ALWAYS, OTHERS.

NON-CLASSICAL FORAYS INTO MODERNISM

AN EXHIBITION AT
THE MUMOK
mumok
Museumsplatz 1
1070 Vienna
Opening hours:
Monday 2 pm – 7 pm
Tuesday–Sunday 10 am – 7 pm
Thursday 10 am – 9 pm
www.mumok.at

The Museum Moderner Kunst Stiftung Ludwig Wien (MUMOK) is one of the most renowned museums for modern and contemporary art worldwide. Together with the Leopold Museum and the Kunsthalle Wien, the MUMOK building, a bold cube covered with grey basalt, is one of the main attractions of Vienna’s MuseumsQuartier, located in the baroque setting of Fischer von Erlach’s former Imperial stables. In addition to classical modernity, the collection is mainly comprised of significant works of Pop Art and Photorealism (Austrian Ludwig Foundation), Fluxus and Nouveau Réalisme (Hahn Collection), as well as Viennese Actionism. This body of works allows visitors to gain unique insights into recent history, its avant-garde tendencies, and its focus on reality and action.

Alongside frequently shown positions such as André Derain, Oskar Kokoschka, and František Kupka, this new selection also includes works by the Hungarian artist Béla Kádár, who combined abstraction with folkloric idioms, by French artist André Beaudin, whose depictions of animals challenged the formulaic nature of cubism, and by the Viennese artists Mathilde Flögl and Friedl Dicker, who aimed at shaping social and political realities through their work in the applied arts. Classical modernism mumok-style is polyvocal.

To make this wide range of voices heard, the curators are staging a dialogue with another rarely shown part of the collection – the eclectic 1970s, whose alternative images of bodies and concepts of identity make classical modernism suddenly look remarkably ‘unclassical’ and astonishingly contemporary.

In her artistic work, Ulrike Müller (born 1971 in Brixlegg, Tirol, lives in New York) explores the relationships between abstraction and bodies and a concept of painting that is not restricted to brush and canvas.

Parallel to and in conjunction with Müller’s solo show, the artist and mumok curator Manuela Ammer are presenting a new selection of works of classical modernism from the mumok collection, which proves to be more diverse than past presentations have suggested. Based on Müller’s interest in images of the body and concepts of identity in alternative artistic practices in the 1960s and 1970s, this exhibition considers the contemporary potential of the formal canon of classical modernism. A juxtaposition of major works from the mumok collection with rarely seen works will shed new light on the relationships between abstraction and figuration and the canonical and non-canonical.
THEATRE & DANCE

› HOTEL EUROPA ODER DER ANTICHrist
based on Joseph Roth
Akademietheater | 19:00
1030 Vienna, Lisztstraße 1
Phone: +43 1 51444 4145
www.burgtheater.at

› DIE UNSCHULDIGEN, ICH UND DIE UNBEKANNTEN AM RAND DER LANDESSTRASSE
by Peter Handke
Burgttheater | 17:00
1010 Vienna, Universitätsring 2
Phone: +43 1 51444 4145
www.burgtheater.at

› AUSLÖSCHUNG
by Thomas Bernhard
Theater in der Josefstadt | 15:30 and 19:30
1080 Vienna, Josefstädter Straße 26
Phone: +43 1 42 700 300
www.josefstadt.org

› ROMEO UND JULIA
by William Shakespeare
Volkstheater | 19:30
1070 Vienna, Neustiftgasse 1
Phone: 43 1 52111 400
www.volkstheater.at

CONCERTS & SOUNDS

› TONKÜNSTLER-ORCHESTER NIEDERÖSTERREICH, conductor JUN MÄRKL
MOMO KODAMA, PIANO
T. Hosokawa: Lotus under the moonlight; W.A. Mozart: Concerto for piano and orchestra a major KV 488; J. Brahms: Quartet No. 1 g minor op. 25
Musicverein (Classical Music) | 15:30
1010 Vienna, Bösendorferstraße 12
www.musicverein.at

› WIENER SYMPHONIKER, conductor BERTRAND DE BILLY
JEAN-YVES THIBAUDET, PIANO
H. Dutilleux: Symphony No. 2; C. Saint-Saëns: Concerto for piano and orchestra No. 5 f major op. 103; M. Ravel: Boléro
Musicverein (Classical Music) | 19:30
1010 Vienna, Bösendorferstraße 12
www.musicverein.at

› 40 Years of Smoking Drums
MATTHIEU MICHEL 5 / HARRY SOKAL & GROOVE / KAMA KAMILA / BITCHES CREW (Austria/israel)
Porgy & Bess (Jazz) | 20:30
1010 Vienna, Riemergasse 11
www.porgy.at

› ANNA VON HAUSSWOLFF (Sweden)
+ LSD AND THE SEARCH FOR GOD (US)
Arena (Alternative Music) | 20:00
1030 Vienna, Baumgasse 80
www.arena.co.at

› SIMPLE PLAN
Gasometer (Pop & Alternative Music) | 20:00
BACA Hall Gasometer, 116 Vienna, Guglgasse 8
www.planet.t

OPERA & MUSICAL

› CARMEN
by Georges Bizet
Arranged by Georg Breinschmied and Tscho Theissing for accordion, violin and double bass
Directed by Andreas Zimmermann
Kammeroper | 19:00
1010 Vienna, Fleischmarkt 24
www.theater-wien.at

› DIE FLEDERMAUS
Operetta by Johann Strauss
Volksoper | 19:00
1090 Vienna, Währingerstraße 78
www.volksoper.at

› TRI SESTRI
by Péter Eötvös, conducted by Péter Eötvös
With Aida Garifullina, Margarita Gristkova, Ilseyar Khayrullova, Eric Jurenas, Boaz Daniel, Clemens Unterreiner
Wiener Staatsoper – Vienna State Opera | 18:30
1010 Vienna, Opernring 2
www.wiener-staatsoper.at

› MOZART!
by Michael Kunze & Sylvester Levay
Raimundtheater | 18:00
1060 Vienna, Wallgasse 18–20
www.musicalvienna.at

Please note that all theatre performances are in German.

WHAT’S ON TODAY IN VIENNA?