SATURDAY, MARCH 2

ECR TODAY

4
THE CUBE – INTERVENTIONAL RADIOLOGY AT ECR 2019

Saturday, March 2 – Neurological IR

MORNING SESSION

09:00–09:30
Tools of the Trade: neuro specials, E. Siebert

09:30–10:30
Simulation Activities

10:30–11:00
What Would You Do? Case studies presented through quiz, E. Siebert

11:00–12:00
Simulation Activities

THE EVENT

12:15–13:30
Part 1: Masterclass H. Henkes
Part 2: Modernising the OR

AFTERNOON SESSION

14:00–14:30
Special Topic: Tandem Stroke, P. Thomas

14:30–15:30
Simulation Activities (including Teamwork A–Z)

15:30–16:00
Neurological Emergencies, B. Fouzi

16:00–17:00
Simulation Activities
Sports imaging: Look out of ‘the dark box’ and collaborate more to achieve success

To make real progress in sports imaging, radiologists must look beyond ‘the dark box’ and collaborate with referring doctors, attend multidisciplinary meetings at the hospital, discuss cases with clinical colleagues, and get feedback on the radiology report and direct correlation with arthroscopic findings, according to Dr. Claudia Weidekamm, Associate Professor of Radiology at the Medical University of Vienna.

Sound anatomical knowledge is also crucial, noted Weidekamm, who is a speaker at today’s transatlantic course on sports imaging. She says she has learned a lot from orthopaedic conferences and fruitful discussions with physiotherapists and surgeons.

“It is important to know that each joint forms a musculotendinous-osseous unit that allows movement in certain directions and to understand the function of each joint in order to interpret the injury pattern with typical associated pathologies in the correct clinical setting,” she told ECR Today. “For example, in patients with anterior shoulder dislocation, look carefully for pathologies at the anterior inferior labrum/glenoid.”

Ultrasound still plays an important role in sports injuries, not only as an immediately available on-the-field imaging modality at sports events but also as a complementary modality for assessment of muscle and tendon injuries or post-traumatic effusions/synovitis.

“Nowadays, we face the problem that ultrasound is performed more and more by sonographers. The radiologist must look beyond ‘the dark box’ and collaborate with referring doctors, attend multidisciplinary meetings at the hospital, discuss cases with clinical colleagues, and get feedback on the radiology report and direct correlation with arthroscopic findings,” said Weidekamm, who added that the next course runs in Auckland from March 21 – 23, 2019 (see mskimagingcourse.org).

At present, she is taking a sabbatical in New Zealand, working for TRG Imaging in Auckland, and future might bring

continued on page 3
This is your third time lucky. Today is the last chance to solve the EDiR Question of the day.

Solve the question posted at the EBR blog before 13:30h.

The question right answer and the winner will be announced at the EBR blog at 14:00h today.

The European Board of Radiology will raffle amongst the winners a free examination fee for the examination that will take place within the ECR 2019 frame. ECR 2019 free registration will be also included!

Go to the EBR blog at blog.myebbr.org to find the EDiR Question of the Day, and further interesting resources to prepare for the examination.
Active monitoring might prove useful in low risk DCIS

When it comes to breast cancer screening and treatment, how much is too much? Are there breast cancers that should be monitored rather than treated? A panel of experts intend to provide answers to these delicate questions during a dedicated session today at ECR.

BY MÉLISANDE ROUGER

Matching high-risk disease biology with chemotherapies is possible now, but it is still tricky to identify cancers that are low-risk. Matthew Wallis, from Cambridge, UK, who will discuss the future role of the low risk disease, finds cancers that probably would not develop or kill anyone in their normal life expectancy, in addition to those that need real treatment. “We have to move to the next step down, i.e. potentially not offering any form of treatment at all,” he suggests. Although cancer is getting better at characterising low-risk cancers, and even the low-risk pre-cancer stage, which may not require any intervention at all. Low-risk ductal carcinoma in situ (DCIS), which can now be spotted early with mammography and confirmed by a biopsy, might never become cancer, and if it does, it would do so much later on in life. For these cases, it might be better to offer active monitoring rather than treatment right away,” Wallis said. “We need to get the next generation of imaging established, because it is all we had to offer. Now we are looking at giving less therapy, for example, surgery and chemotherapy because there is no difference between the two.”

Prostate trials carried out in 1000 men with low risk prostate disease have already shown that there was no difference between active monitoring and surgery in terms of mortality. “But clearly the side effects of surgery, for example, impotence, were far worse than not doing anything,” Wallis added. “The next trial going on in the UK is called PREDMET and will tackle invasive cancers, the ones we know can potentially spread over the breast. We are offering women aged over 60, with small, low-risk cancers to opt into radiotherapy or opt out,” Wallis said. “The idea was to see which option the patient would prefer.”

“Surgeons and the medical team peddled the idea that cancer is there and has to come out for years, because that is all we had to offer. Now we are looking at giving less surgery and chemotherapy because everything has side effects. We really want to inform women and get them to understand that not all cancers are a death sentence, and treatment can have significant side effects, so it might be worth trials of a different approach, such as active monitoring,” he concluded.

HIGHLIGHTS

BREAST

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Breast cancer screening is effective and reduces mortality significantly. But it still falls slightly short of distinguishing between cancers that should be treated and cancers that should not, according to Prof. Matthew Wallis, from Cambridge, UK. “Ultrasound can become accessible with the support of CT or MRI to make adequate landmarks, and the advantages of each imaging modality can be consolidated to achieve a correct diagnosis and appropriate treatment, leading to the best possible outcome for the patient.”

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THE PARTY
DANCE WITH THE SHARKS

MARCH 2
AT 20:30

STARRING
MÖWE
AUSTRIA
KAYC
GERMANY
RUDEEJAY
ITALY
DOMINIQUE JARDIN
AUSTRIA

ECR 2019
Professor Paul Sidhu is Professor of Imaging Sciences at King’s College London and consultant radiologist at King’s College Hospital, where he helped pioneer contrast-enhanced ultrasound (CEUS), a technique that can potentially be used to image children just as well as adults, in reduced time, and without the downsides of radiation and toxicity. Professor Sidhu will make the case for CEUS use in paediatric radiology today during the Luigi Oliva Honorary Lecture.

There is no question that ultrasound is the most child-friendly imaging technique. The modality has countless benefits for young patients: no ionising radiation, no sedation, no anaesthesia, and ease of use, to name a few. “Ultrasound is the most suitable modality for imaging children, as they don’t have to stay still. Parents can be present during the examination to support their child. The radiologist can stop and start the examination without losing information, plus children have low body fat and are better suited to ultrasonography,” Sidhu said.

Adding a contrast agent to ultrasound has shown to improve diagnosis tremendously in applications where vascularity or haemo-dynamics must be assessed. With CEUS, radiologists can obtain a lot of information in the first five minutes following the injection, the time window that the contrast agent lasts in the blood pool. This is more than enough to carry out the examination and make a conclusion. The technique can be used in every possible scenario from trauma to disease imaging, with great results. “Imaging with ultrasound in children is the most useful and informative procedure,” Sidhu concluded.

Professor Sidhu pioneered CEUS with his team at King’s College Hospital in 1996 and has since applied it in many areas including liver lesions, abdominal trauma, kidneys, testes and in the lungs. “We have used the technique with intracavitary delineation via indwelling catheters, adding management of infective collections,” he added.

Another major benefit is that ultrasound contrast is safe. Contrast reactions in all imaging procedures are a recognised complication, both in adult and paediatric radiology. Iodine contrast used in CT can cause allergic reactions and renal impairment. Gadolinium used for MRI may also present a problem, as the long term effects of some agents are still unknown.

Administering an anaesthetic in a child, as is required for most MRI examinations, is also out without risk. “We don’t know the effect on the developing brain; there are some issues there. MRI remains challenging to carry out in children, because they have to keep incredibly still. The examination takes between 15 and 20 minutes and requires sedation or general anaesthesia. Parents can often be in the room, but many precautions need to be observed.”

With CE, staying still is often manageable for the short period of the examination, but some younger patients, particularly acute trauma patients, may need sedation. A downside of CEUS is that you have to administer contrast through an intravenous injection, similar to CT and MR imaging, and putting a venous line in children is often not easy for patients and professionals alike. To circumvent the association of pain with the contrast ultrasound examination, the ward-based paediatric team manages the line insertion. “The child has an intravenous line inserted by the ward by the paediatrician, not in the radiology department. So we become the good guys,” he said.

A fact that radiologists need to be aware of is that they can use CEUS is that they will use a contrast product, which, in children, is off-label, i.e. not licensed in that group age. Sonovue, the contract agent that is used for that kind of imaging, is only licensed for focal liver lesion assessment in the USA.

This is acceptable, as 70% of drugs used in children are off-label, Professor Sidhu pointed out. “Legally, if the drug is shown to be useful and the doctor takes responsibility, there is no issue.”

CEUS has become widely used in adult imaging, but use in different countries varies, with widespread use in China, Korea, Japan, Germany, Italy and the UK. The development of paediatric contrast ultrasound imaging is likely to follow a similar pattern.

CEUS is ready for clinical paediatric use, argues UK pioneer

HIGHLIGHTS 2 in your mobile

ECR TODAY | SATURDAY, MARCH 2, 2019

HIGHLIGHTS

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Some highlights from the ET 2019 programme

Special Topic Sessions
Examining the current evidence on new or controversial developments in embolotherapy.

Technical Focus Sessions
Highlighting the latest trends in specific embolic materials, delivery systems and advanced guiding modalities.

Case Remedy Sessions
Featuring case discussions including therapy options, technical aspects, outcome and follow-up.

Morbidity and Mortality Conferences
Looking at the “bad days” as well as the “good days” in the angiosuite.

www.ETconference.org
Future tumour boards: how to maximise imaging's contribution

Multidisciplinary tumour boards are essential in the treatment of neoplastic disease, but they are very time consuming for all specialists involved, especially the radiologists, whose contribution starts well ahead of the meeting. It is essential to develop strategies that can help radiologists save time, and new approaches are already emerging, as a panel of experts will explain today in a New Horizons session on the subject.

Recent evidence has shown that multidisciplinary tumour boards (MTBs) improve diagnostic accuracy, adherence to clinical practice guidelines, and clinical outcomes. They have become vital to oncology treatment and are increasingly common in hospitals, especially in comprehensive cancer centres.

It is important that MTBs do not collide too much with everyday practice. When the radiology department has enough staff, this may not prove too complicated, but when resources are tight, fitting MTBs into a busy schedule may prove challenging, according to Prof. Daniele Regge from Turin, Italy.

“We have about 18 MTBs and we are about ten radiologists; that means that each of us has to attend a lot of these meetings, probably a couple a week, and prepare cases. Each tumour board takes approximately four hours to prepare and attend,” he said.

Data shows that the radiologist is a top game changer in the treatment of patients with cancer. When a decision is taken, the radiologist gets the right interpretation in about 60% of cases, evidence shows. But most of the time, radiologists’ contributions to an MTB are pretty straightforward; they receive the cases with the images via email and send back their reports using the same channel. This prompts many to believe that maybe they should not be attending all the meetings.

“It is unclear whether we should attend all MTBs. However, it is absolutely necessary that we do when we are really useful,” Regge said.

Radiologists should be present for cases that require a lot of surgery preparation, such as breast cancer, in which the surgeon and the oncologist may need support to understand mammography and MR images.

“You can remove a nodule and be very conservative. If surgery is mandatory, you do not want to take out the whole breast; it depends on how much of the breast is involved.

You need to know if the tumour is not too close to the bone, and have a lot of other information to prepare for surgery. The radiologist can give key information to decide whether and how it should be done,” he said.

Attending MTBs really boils down to time. The first solution is to have more staff to perform image interpretation or reinterpretation, to free up time for the specialised senior radiologists who will attend the MTB. “We often have to reinterpret images and compare results. That means spending even more time preparing for the meeting than attending the meeting,” said Prof. Christoph Becker from Geneva, Switzerland.

For the meeting to run smoothly, infrastructure must be suitable. Rooms hosting the MTBs must be equipped with enough monitors and double projection systems to access and view the electronic patient record (EPR), PACS images, and other tele Radiology and IT tools that may be used in workflow and need to store huge data volumes.

In the future, MTBs will need to include more integrated diagnostic information, Becker believes. “We will need to integrate this information ahead of the meeting, from all disciplines involved – radiology, pathology, nuclear medicine, genetics and molecular medicine. Personalised medicine in oncology requires having a global overview of diagnostics,” he said.

Extracting data from the EPR will also prove essential and future developments in data science will make this increasingly possible. The structural report (SR) will also certainly be instrumental. In colorectal cancer, radiologists must provide a lot of information to both surgeons and oncologists on the distance between the tumour and the anus or tumour extension. Being able to put all that information on tumours automatically for SR and we will just have to check that everything is accurate and sign the report. It will speed up the whole process and you can attend the MTB and play an increasingly clinical role, by becoming more and more involved in treating the patient and spending less time detecting lesions,” Regge concluded.

The structured report (SR) will be implemented in MTBs to improve efficiency and accuracy of consultations. Structured report enhances collaborative reporting and could be implemented in MTBs to improve efficiency and accuracy of consultations.

“Structural report allows links to key images, supports measurements and identification of regions of interest and has a template-driven content and structure. Structural report enhances collaborative reporting and could be implemented in MTBs to improve efficiency and accuracy of consultations. (Provided by Prof. Daniele Regge)

Example of a structured report of a patient with metastatic lung cancer. Structured report allows links to key images, supports measurements and identification of regions of interest and has a template-driven content and structure. Structural report enhances collaborative reporting and could be implemented in MTBs to improve efficiency and accuracy of consultations. (Provided by Prof. Daniele Regge)

Radiologists are pivotal to the success of multidisciplinary tumour boards; here at the Geneva University Hospital. How to strengthen their role on these boards while keeping workload under control, will be discussed in today’s New Horizons session. (Provided by Prof. Christoph Becker)

New Horizons Session
Saturday, March 2, 16:00–17:30, Room F2

NH 16 The tumour board of the future
» Chairperson’s introduction
M. Prokop, Nijmegen/NL
» How to set up and run a multidisciplinary meeting
C. Dromain, Lausanne/CH
» Preparation for tumour boards: how to increase efficiency of the radiologist?
D. Regge, Turin/IT
» Physical or virtual multidisciplinary meetings?
E. Neri, Pavia/IT
» Maximising the added value of tumour boards
C.D. Becker, Geneva/CH

Panel discussion: How to strengthen the role of the radiologist in multidisciplinary tumour boards while keeping workload under control.
The Artificial Intelligence Exhibition (AIX)

Making its grand debut at ECR 2019, the AIX brings the hottest topic in radiology to the heart of the technical exhibition.

Meet the innovators applying machine learning, deep learning and big data to medical imaging, and take in illuminating sessions at the AIX Theatre. You can even start your own deep learning adventure thanks to self-paced training provided by Nvidia’s Deep Learning Institute in partnership with the ESR.

Whether you’re exploring AI for the first time, researching it, or just want to chat about the future over a free juice at Algorithms Bar, the AIX is a must visit at ECR 2019!

The AIX is located in the X1 hall.
For more details, and the full AIX Theatre programme, visit www.myESR.org/ai
Imaging and minimally invasive interventions of spine come under scrutiny

Medical imaging professionals need to understand that spinal examinations of children and adults are very different, with entities in children that can be easily overlooked compared to adults, according to Prof. Pia Sundgren, from Lund University in Sweden. Today she will give a keenly awaited presentation to ECR 2019 delegates about imaging strategies in spinal trauma.

“There are injuries in the paediatric spine that we simply do not see in adults,” she told ECR Today.

Sundgren explained that in the child, it is more common to have a high cervical spine injury due to muscle weakness, and a larger and heavier head in proportion to the torso and rest of the body.

When comparing like-for-like injuries in the child and the adult, the paediatric spine is less likely to experience the same severity of damage. Also, due to the plasticity and flexibility of the under-developed paediatric spine, there can be injuries to the spinal cord without spinal fractures,” she said. “In the child, the cord itself gets damaged, but the spinal column can move significantly, resisting injury, whereas in the adult it moves less, so a spinal injury will often also result in bone fracture and/or ligamentous injury.”

Turning to imaging strategies, Sundgren pointed out that increasingly her team is using multi-detector imaging for the spine, although significantly her team is using multi-detector imaging for the spine, although CT is often considered more powerful than x-ray – 90% use local anaesthesia, reduced risk,” said Manfrè. “The incision is small and made with a needle, and there is minimal pain. Post-operative rehabilitation is nearly zero and patients leave within 24 hours.”

Joining Sundgren at the session will be other distinguished speakers from Europe and the United States, including Prof. Luigi Manfrè, Director of the Minimally Invasive Spine Therapy Department at the Mediterranean Institute of Oncology, Viagrande, Catania, Italy, who will discuss some cutting-edge techniques. Minimally invasive spinal interventions have revolutionised medicine, he explained.

“We want to be less aggressive and use small instruments, but if we are minimally invasive (methods), then we need a way to see what is going on, and for that reason we use x-ray or CT,” he said. “My operating room is a surgical CT unit and a C-arm for x-ray. We combine the two systems so we can operate on the patient without a large incision, but still see what we are doing.”

Approximately 75% of all spinal surgeries can be performed with minimal invasion, and this set-up is advantageous for patients and surgeons.

“There is no general anaesthesia – 90% use local anaesthesia, reducing risk,” said Manfrè. “The incision is small and made with a needle, not a knife, and there is minimal pain. Post-operative rehabilitation is nearly zero and patients leave within 24 hours.”

He also highlighted that less time in hospital for the patients, as well as a less invasive procedure, translated into reduced costs.

For clinicians, using CT is associated with fewer complications because the interventionalist can clearly see what they are doing. Manfrè added that CT is often considered more powerful than x-ray and more risky but a recent study shows this is not the case.

“Conventional x-ray spreads 360 degrees around the patient, while with CT focused on spine, a very low radiation level is sufficient for surgery. Our data show that CT reduces radiation exposure by 90% compared to conventional x-ray,” he said.

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— Becky McCall

E N D O F  P A G E

Special Focus Session

Saturday, March 2, 08:30–10:00, Studio 2019
SF 13b Cutting edge imaging and minimally invasive interventions of the spine

• Chairperson’s introduction
  J. Van Goethem, Antwerpy/BE
  Imaging strategies in spine and spinal cord trauma
  PC. Mali Sundgren; Lund/SE
  Advanced imaging of spinal cord lesions: do we need DWI, perfusion and spectroscopy?
  M.M. Thurnher; Vienna/AUT
  Spinal CSF leaks: the precise ‘roadmap’ for clinicians
  J.S. Ross; Phoenix, AZ/US
  Cutting edge minimally invasive spine interventions
  L. Manfrè; Catania/IT
  Panel discussion: How can we make spinal imaging better?

A procedure is performed in a hybrid operating room at the Mediterranean Institute of Oncology, using CT and C-arm systems simultaneously. (Provided by Prof. Luigi Manfrè)
Why patient safety and communication are more about EQ, and not just IQ

Patient safety and communication are not just about IQ (intelligence quotient), they’re also about EQ (emotional quotient), according to Dr. Erik Briërs, a patient advocate from Hasselt in Belgium. At this afternoon’s joint session organised by the ESR and the European Federation of Radiographer Societies (EFRS), the focus will be on how good communication can enhance patient safety in medical imaging.

Communication between the radiologist and the patient should be honest and easy to understand so that the patient is made to feel safe and secure and have confidence in the outcome, he noted. Clear communication from the multidisciplinary team is the essence of good practice, and patients must be able to access comprehensible information from all levels of healthcare professionals at any point along their journey to diagnosis.

Furthermore, he thinks that engagement should begin at the local radiology department level and that patients’ concerns around safety are less to do with the procedure they are about to undergo and more to do with the reason why they are there.

“Patients are worried about their diagnosis and radiologists can play a big part in allaying patients’ anxieties if they explain procedures such as what contrast agents are used for and why intravenous lines are needed prior to the procedure,” said Briërs, who is a board member of the Europa Uomo, a European coalition of patients supporting groups for prostate diseases.

He is convinced that patient advocate groups are useful for improving personal understanding about diagnostic procedures because they relieve anxiety and provide good information. There is nothing like learning from those who have undergone the procedure, but he cautions that objectivity is also necessary when taking into account patients’ stories.

As a member of the ESR Patient Advisory Group, he has collaborated on the development of numerous patient leaflets that explain about contrast agents and radiation risks. He also reviews patient leaflets for complexity and level of prior knowledge required, and reckons that good quality leaflets help to improve awareness of radiation dose.

A number of versions of the same document need to be designed to accommodate for different levels of understanding and intellect within the patient population, Briërs continued. Interestingly, 70% of the population have IQ levels of between 84 and 125, but in terms of quality-of-life years, there is a 12-year difference between people at the lower end compared to those at the higher end of the IQ scale.

Fellow speaker Dr. Adrian Brady, a consultant radiologist from Mercy University Hospital in Cork, Ireland, noted that allaying patients’ concerns during their journey from investigation to diagnosis is important because of the journey from investigation to diagnosis is important because of the journey from investigation to diagnosis, but the bulk – if not all – of a radiologist’s work occurs prior to diagnosis, and therefore the radiologist is effectively overlooked when defining parameters in value-based healthcare.

Brady, who is chairman of the ESR Quality, Safety & Standards Committee, suggested that some conceptual economic models fail to acknowledge the importance and contribution that radiologists make, even though they play a fundamental role in the diagnostic process in modern healthcare delivery. He maintained that it is absolutely vital that radiologists must be considered earlier on in the patient journey when allocating resources aligned with value-based healthcare, and party with other medical specialties is crucial if radiologists are to be included in measurements of value.

Brady noted that the ESR published a position paper on value-based radiology in 2017, and that members of the ESR’s value-based imaging patient group are currently collaborating on a multi-society position paper on the same topic. Because some current economic models are not ideally designed to capture the importance and value that radiologists contribute in terms of either financial or quality-of-life values, the group hopes to be able to influence value-based healthcare models to include radiologists in order to influence what is measured.

At today’s session, Brady’s take-home message will be that one of the most important elements of the radiologist’s job in value-based radiology is ensuring the appropriateness of a test and that it is incumbent on radiologists when advising other doctors to determine the correct test for the patient.

“We need the right test that provides the maximum information and the minimum harm,” said Dr. Adrian Brady, who is shown here performing an interventional procedure.

Joint Session of the ESR and EFRS (European Federation of Radiographer Societies)
Saturday, March 2, 16:00-17:30, Room C
Patient safety in medical imaging
Moderators: A. Brady, Cork/IE
J. McNulty, Dublin/IE

- EuroSafe Imaging and the European Basic Safety Standards: effective, progressive, patient safety
- G. Frijia, Paris/FR

- Patient safety: beyond radiation protection
- K. Azevedo, Faro/PT

- Value-based imaging and patient safety
- A. Brady, Cork/IE

- Patient safety related education and training
- J. McNulty, Dublin/IE

- Patient perspectives on patient safety in medical imaging
- E. Briërs, Hasselt/BE

- Panel discussion: The role of the ESR and the EFRS in promoting patient safety

This session is part of the EuroSafe Imaging campaign.

"We need the right test that provides the maximum information and the minimum harm," said Dr. Adrian Brady, who is shown here performing an interventional procedure.

"We have a mass of devices now, but in medicine there’s a saying, ‘God gave a limit to wisdom but not to stupidity.’ The fact we have so many things doesn’t mean we have to use them all. The biggest problem is so-called ‘over-treatment.’ You might have a weapon but you don’t have to use it,” he concluded.

"Here in Italy, there were almost 60,000 fractures in 2011, with a calculated increase of 2% for the coming year, making this a social problem. It affects quality of life sig- significantly with inability to work, a need for lots of treatment and reha- bilitation, tending overall for around two or three months,” he noted.

"By placing a needle into the ver- tebra and injecting some glue-like cement (PMMAs), the fracture is fixed in seven minutes, making it solid, he continued. “I’ve treated a boxer this way – he had a fracture on Mon- day, treatment on Thursday, and he went back to box on Saturday! It’s an instant glue that lasts forever.”

At today’s session, he will also describe two CT-mediated treatments for localised verte- bral tumours: radioablation and cryosurgery. “This involves burning the tumour at approximately 100 degrees, or alternatively freezing it at minus 80 degrees Celsius. In spec- ific cases we can completely cure the patient,” said Manfrè.

These treatments are important because vertebral metastases are very common and are a leading cause of mortality. It has been cal- culated that almost 30,000 new cases per year occur, he added.

"In diagnostic procedures, there is nothing like learning from those who have undergone the procedure, but we have to acknowledge the importance and contribution that radiologists make, even though they play a fundamental role in the diagnostic process in modern healthcare delivery. We maintained that it is absolutely vital that radiologists are considered earlier on in the patient journey when allocating resources aligned with value-based healthcare, and party with other medical specialties is crucial if radiologists are to be included in measurements of value. Briërs noted that the ESR published a position paper on value-based radiology in 2017, and that members of the ESR’s value-based imaging patient group are currently collaborating on a multi-society position paper on the same topic. Because some current economic models are not ideally designed to capture the importance and value that radiologists contribute in terms of either financial or quality-of-life values, the group hopes to be able to influence value-based healthcare models to include radiologists in order to influence what is measured.

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Are we seeing the start of a deeper bond between radiology and pathology? As pathology is heading down the road to digital transformation, the two specialties could become a power couple in healthcare, with considerable means to improve oncological treatment. A panel of experts will explore current and future areas of cooperation today in a dedicated session at the ECR.

Radiology and pathology have been working side by side for a long time, complementing each other to provide accurate medical information. But in the digital age, they could join forces in ways that could impact healthcare more positively than ever, many believe.

"Radiologists and pathologists both work with images and our workflow is very similar: we perform image acquisition and visualisation, and then write a report. Digital images can now also be viewed by pathologists. Exploring new cooperation paths is the natural evolution," said Prof. Luis Donoso Bach from Barcelona, Spain.

"More developed integration of pathology really is a step forward both regarding visualisation and for smoothing out the work procedure in MTBs," she said.

At Umeå University Hospital in Sweden, digital imaging and digital pathology data are already stored in the same PACS, a solution that tremendously improves workflow. "In our PACS, radiology and pathology data are seamlessly accessible. Working in an integrated PACS gives you combined information and helps save time when checking up results, planning a biopsy or doing a follow-up after surgery," Riklund said.

"The pathology reports are still stored in another system, which is not readable from the PACS, but an ongoing integration solution is under way.

In the future, a higher degree of histopathology verification of imaging findings would be the easiest win in integration, Riklund believes. "More developed integration with advanced multiparametric analysis of both pathology and radiology data will increase the information gained from the combined data."

"Because the information provided by pathology is so critical, it is increasingly similar to that obtained in pathology workflows could be merged even more efficiently. Having common reports that blend radiology and pathology information together is an idea that is starting to make sense, according to Dinan van Diest from Utrecht, the Netherlands."

"In multidisciplinary teams and especially MTBs, our cooperation is already consolidated. The pathology data are seamlessly accessible. Working in an integrated PACS will also take part in the session. "In the next five years, we expect that different structures will offer digital pathology services across the Netherlands," he said.

Van Diest helped launch the PITE project, a national platform for safe exchange of digital images and pharmacy labs, in 2018. Using this tool enables rapid and low cost consultation and use in presentations and panels, and leads to improved results for the benefit of the patient, among other benefits. Dutch pathology services deal with an average of 20,000 annual cases, including 30,000 for second opinions alone. The turnaround time of findings can be up to 14 days, with 15% of the cases taking over four days. With PITE, van Diest and his colleagues managed to narrow down that time to just a day. During the pilot consultation that was run between UMCO and Rijnmond UMC Nijmegen last summer.

In the future, artificial intelligence solutions will help improve digital cooperation between radiology and pathology experts on both sides agree. "AI will enable analysis of very large amounts of data in a short time and easy recognition of patterns that cannot be visualised today. What is more or less hidden in the image data now will be visible with the help of AI algorithms, and we will be able to combine multiscale patient information with a focus on quantitative analysis. Today, in my department, we are only using AI in clinical routine to a limited extent, i.e. for determination of metastatic burden in bone scintigrams, but to research there are more ongoing applications, some of which will help improve healthcare," Riklund concluded.

Radiology began digitalizing its services nearly twenty years ago and pathology has just started on that path, boosted by cheaper equipment and digital storage solutions that enable management of the once challenging volumes of information generated in daily practice. Obvious benefits can emerge from increased cooperation between the two disciplines. Physicians can get immediate access to data that is needed in clinical routine. This can become very handy in multidisciplinary tumour boards (MTB), when data can be shared both in the local conference room and to remote participants. The risk of breaking, losing or mutilating glass slides also disappears.

"These are two of the major advantages of working as a digital environment, according to Prof. Katrine Riklund from Umeå, Sweden. Faster access and reduced risk of confusion of patient data facilitate clinical decisions and increase patient safety. Another positive effect is the possibility to have direct feedback after punctures and biopsies: Digitalisation of pathology really is a step forward both regarding visualisation and for smoothing out the work procedure in MTBs," she said.

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**More than pals? Digitalisation brings radiology and pathology closer than ever**

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Stress at work is an increasingly common phenomenon, but radiologists still may not be recognising the symptoms of burnout in both colleagues and in themselves, according to expert speakers at today’s Professional Challenges session. Like all health problems, identifying issues early and taking appropriate action is key to the cure.

BY FRANCES RYLANDS-MONK

Early recognition of the signs can help reduce stress levels at work and prevent burnout

Symptoms of chronic stress occur in approximately half of all healthcare professionals, leading not only to diminished health and quality of life among the individuals themselves but also to concerns over patient safety, quality of care, patient satisfaction, and the sustainability of healthcare systems, said Prof Myriam Hunink, professor of radiology and clinical epidemiology at the Erasmus University Medical Center on Rotterdam, the Netherlands. Radiologists rank in the top third of medical specialists with burn-out, and they tend to be among the least unhappy too, she noted.

In her presentation, she will highlight the main symptoms of burnout: emotional exhaustion, a diminished sense of personal accomplishment, and a feeling of personal inadequacy.

Chronic stress and burnout are due to an imbalance between stress factors and resources, she noted. Stress factors range from ambition, perfectionism, self-criticism, and constant electronic connectivity to interpersonal conflicts, employer demands, litigation, digitalisation, and complex medical concerns. However, radiologists can be resourceful, and use tools such as resilience training, healthy lifestyle, social support, meaningful activity, effective communication, and efficient work processes.

To combat burnout among radiologists, she recommended the following: mind-body, change work and financial concerns, reduce the pressure to be productive, and thereby improve the quality of care, effective interactions are needed at both organisational and individual level, she told ECR Today ahead of the congress.

In today’s session, panellists and delegates will discuss the signs and symptoms of chronic stress and burnout, the factors that lead to the problem, and preventive measures that can lead to active work engagement and well-being among radiology professionals. Hunink pointed to excellent information provided by the US-based National Academy for Medicine (see https://nam.edu/clinicianwellbeing/).

The presenters are hopeful delegates take away from them with the presentation, it’s this: be aware of the symptoms in yourself, in your peers and your employees – and actively do something about it,” she pointed out.

Speaking about his personal story, Dr. Markus Berger, chief of radiology at the Swiss Paraplegic Centre in Nottwil, will reveal how a breakdown in the spring of 2012 presented as physical symptoms, including dizziness, when driving his car to work one morning. An MRI of the brain showed nothing abnormal, but the next day he began to lose vision in his right eye.

“Looking back now, I had been having problems sleeping for six months or so and waking up in the early hours with unstoppable ruminating thoughts. There had also been symptoms during the day like occasional irregular heartbeats or eczematous rashes that I had never paid much attention to. I realised that I wasn’t happy at work anymore and something had to change,” he said.

Berger negotiated six weeks of part-time work, and used this period to recuperate at home and take long walks. He regained his balance and began to ride his bike again. He also underwent further cardiovascular and neurological tests, but despite the irregular heartbeat and dizziness, the results revealed no major abnormality. After the summer, Berger returned to full-time work but his sleep was disturbed and he didn’t feel happy.

Fortunately, a colleague from outside of radiology told him about Mindfulness-Based Stress Reduction (MBSR) and suggested he tried it to relieve his symptoms.

“I was sceptical as it seemed wishy-washy, but I signed up. The first meeting was a shock: people sat on the floor surrounded by candles. At each meeting, we did body work, and I noticed my breathing was different. I slept better, and I did feel happy.

For Berger, the eight-week MBSR group programme was ideal, particularly because he could interact with other participants. Similar techniques are also available online, or can be accessed via books and CDs.

Mindfulness is not only a possible fix for burnout or depression but also it can serve as a preventative measure. Furthermore, it enables radiologists to live more consciously and as a result, he said, adding that these studies have shown that mindful individuals concentrate better and are less inclined to jump to conclusions.

He pointed to a study in which participants who were shown a video of two teams passing a ball between team members. Study participants had to count how many times one of the teams passed the ball, and then afterwards were asked if they noticed anything unusual in the clip. While participants gave near to correct answers about the number of passes, around half of them missed the huge gorilla that strolled through the group of players in the middle of the video.

This idea of busy radiologists missing a relevant finding because they are looking for something else is not new, but stress and the pressure to be productive plays a big part in this, Berger noted. Mindfulness helps you see things you wouldn’t necessarily notice when you are suffering, he said.

Professional Challenges Session

Saturday, March 2, 08:30–10:00, Room C
PC 13 Working in radiology: burnout and bore-out or engaged and passionate?

> Chairperson’s introduction
  M.G.H. Hunink, Rotterdam/NL
  E. Mentala, Helsinki/FI

> A personal story
  M.F. Berger, Nottwil/CH

> The role of technology in the job satisfaction and well-being of radiology workers
  S. Aarts, Maastricht/NL

> Dealing with daily battles: factors that lead to chronic stress and burnout
  A. Montgomery, Thessaloniki/GR

> From chronic stress and burnout to work engagement, meaningful work and employee well-being
  J. Hakanen, Helsinki/FI

> Panel discussion: Achieving well-being among radiology staff

Dr. Myriam Hunink meditates in her kikko clothes in the dojo.
From the pericardium to cardiac veins: often forgotten cardiac structures

Imaging the heart is a complex matter, not least because of its perpetual motion and the small size of some of the structures that need to be evaluated. However, despite these and other challenges, imaging of the heart has advanced massively in recent years, today playing a central role in the recognition, characterisation, monitoring, and successful treatment of a wide range of cardiac diseases. Chief among them is, of course, cardiovascular disease, the most common cause of death worldwide and thus, an important focus for cardiac imaging... but sometimes at the cost of other structures.

Cardiac imaging techniques tend to focus on the left ventricle, coronary arteries and cardiac valves, particularly in the adult patient. This reflects the prevalence and significance of diseases affecting these structures in the general population, according to Dr. Charles Peebles, from the department of cardiology at the University Hospital Southampton, UK, who will chair today’s session.

It is therefore possible that other areas of anatomy are overlooked or overshadowed, even though anomalies of these structures may be the cause of significant pathology and lead to a broad range of difficulties in cardiovascular interventional procedures. In today’s session, four experts will bring some of these structures back into the spotlight.

“The session will focus on areas of anatomy and their functional significance, that are often forgotten in the primary cardiac analysis,” said Peebles, who expects the session to offer delegates comprehensive knowledge of often forgotten, but no less important cardiac structures, and imaging techniques available to evaluate them.

According to the session off will be Dr. Alan Napolsky, who is the deputy director of the department of medical imaging at the Centre Hospitalier de Luxembourg, who will familiarise ECR delegates with pericardial diseases, which encompass a wide spectrum of clinical conditions. According to Nabhso Longang, delayed diagnosis and inappropriate management of these conditions are associated with high morbidity and mortality, whereas appropriate treatment may dramatically relieve patient symptoms.

In his presentation, he plans to specifically address the basic spectrum of disease processes affecting the pericardium, physiological effects of pericardial disease on cardiac function, the definition of pericardial syndromes, and the specific advantages and weaknesses of CT and MRI in evaluating pericardial diseases and differentiating normal from abnormal findings.

Following his presentation, Dr. Gorka Bastarrika, from the department of radiology at the University Clinic of Navarra, Pamplona, Spain, will discuss the right venous (RV), focusing especially on normal appearances of the right venous trunk on CT and MRI, appearances and physiology of RV volume and pressure loading, and adverse prognostic markers related to the RV.

However, the pericardium and the right venetricle are not the only often forgotten structures: epicardial fat also joins the list. “For radiologists, knowledge about epicardial fat also seems to be more interesting, even though their anomalies can lead to difficult diagnostic and interventional radiology,” said Assoc. Prof. Dr. Katarzyna Gruszczynska, from the department of radiology and nuclear medicine at the Medical University of Silesia, Katowice, Poland. Her talk will address the differences between epicardial and pericardial fat and methods of quantifying epicardial fat. She will also try to answer the question of whether epicardial fat should be seen as a friend or an enemy of the cardiovascular system.

“Epicardial and pericardial fat are both located in the mediastinum, around the heart, with epicardial fat tissue (EFT) being the layer of adipose tissue located within the visceral pericardium directly on the myocardium, covering the coronary vessels and pericardial fat being located outside the parietal epicardium,” she explained, emphasising that EFT is the metabolically active visceral fat. “It is responsible for myocardial energy supply, lipid-storage, thermoregulation, and endocrine secretion. There has been growing interest among researchers in EFT recently as cardiovascular disease remains the main cause of death in the developed world and as there is also a relationship between EFT and cardiovascular risk factors such as obesity, metabolic syndrome, hypercholesterolaemia, and coronary artery ectasia from sclerosis. In many studies, patients with higher calculated score also have a higher amount of EFT. So EFT can act as both a friend and an enemy of our cardiovascular system.”

Meanwhile, studies suggest that EFT can serve as an independent predictor of cardiovascular risk and adverse outcomes. “Currently available data for pericardial fat are rather vague. Due to its close relationship with the heart and coronary arteries, EFT seems to be more interesting for researchers,” Gruszczynska said, adding that traditionally EFT thickness has been measured by ECHO.

“However, CT and MRI offer the possibility of non-invasive quantification of EFT, and the dedicated software already exists. Although EFT is subject to research in diagnostic imaging, it is also useful to recognize its anatomical variants, as they could mimic disease.”

During her talk, Gruszczynska will discuss both methods, as well as their strengths and weak points. “I personally used cardiac MRI to measure EFT on short-axis slices; however, CT offers better spatial resolution and is very fast. It is important to accurately compare these different methods and programmes and to validate them against manual measurement. Standardisation is the key to being able to use EFT measurement as an endpoint in clinical studies.”

Last but not least, Dr. Maja Hrabak Paar, from the department of diagnostic and interventional radiology at the University Hospital Center Zagreb, Croatia, will discuss anomalies of cardiac veins and venous drainage and to go over related common anomalies and their clinical significance point-by-point. “Understanding of venous anomalies is essential for their optimal interpretation and for the avoidance of diagnostic pitfalls,” Hrabak Paar concluded.

State of the Art Symposium
Saturday, March 2, 08:30–10:00, Room F2
SA 13 Cardiac: recalling the forgotten structures
• Chairperson’s introduction
  C. Peebles; Southampton/UK
• Hide and seek: the pericardium
  A. Longang; Luxembourg/LU
• Lost chamber: the right ventricle
  G. Bastarrika; Pamplona/ES
• Friend or enemy: epicardial fat
  K. Gruszczynska; Katowice/PL
• Wrong ways: anomalies of cardiac veins and venous cavae
  M. Hrabak Paar; Zagreb/HR
• Panel discussion: Which test would you use, MRI or CT?
Patients call on ‘friendly’ radiologists to use non-medical language to boost clarity and safety

Birgit Bauer had an MRI scan and a lumbar puncture with little understanding of why the procedure was needed, and she was badly affected by the whole experience. Now she works as a digital health and social media expert and a researcher into patient experience, and at today’s session she will be among those discussing how improved communication with patients can make radiologists better at their job.

In January 2005, Bauer sat in the emergency room of her local university hospital. Her general practitioner had given her a medica- tion for double vision in her right eye, and she’d seen two ophthalmologists about it, but nothing had helped. Later that evening, she was moved to the neurology department, where long needles were used to clean fluid from her spine. This was followed by a high dose of steroids, which she wasn’t informed about, and then she was taken for an MRI scan.

“I asked documents and asked for more information,” she told ECR Today. “But I wasn’t informed about what I was signing. I signed because I trusted the doctor.”

The MRI was loud and vibrating. Bauer was mildly claustrophobic and soon had a panic attack. She also had another infusion in her arm, which she now knew was the MRI contrast agent.

“I had no information whatsoever,” she said. “I presumed the emer- gency button in the MRI three times. I think, and they gave me pills to calm down, but the pills didn’t help.”

Back in her hospital room, she waited for a diagnosis. That evening, the neurologist came to tell her about a highly technical language what was going on and gave her some tissues.

She wondered what he was talking about. He said, “Do you understand me? And she said, ‘No, because I’m not a medical doctor.’” By this point, she’d been in hospital for three days.

Bauer was diagnosed with multiple sclerosis (MS). In today’s talk, she plans to recommend that radiologists and other clinicians use non-medical language when talking to patients. Patients need to understand that MRI scans and other examinations are used to monitor progression of MS and other diseases and these results are significant to make informed decisions about changes in medication and new therapy options.

She believes her first MRI exam could have been a much more pleasant experience. Two to three years after her first scan, her new radiologist gave her stronger mediation to relax her and used a bigger machine with more space.

“He assisted gave me tips on how to calm down without a pill, and took the time to explain this to me,” said Bauer. “He lives in Aachen, Germany.”

A problem for radiologists is that rapid technological development increasingly removes them from direct patient contact, explained Dr. Adrian Brady, consultant radiologist at Mercy University Hospital, Cork, Ireland. There are more reports to complete, and fewer opportunities to give feedback to patients. Also, many patients confuse radiologists with other specialists and there is still a perception they hide from patients in darkened rooms.

“If we want to educate patients about what we do, it’s up to us to achieve that,” he said. “And this feeds into working out the best mechanisms for communicating patient information.”

Brady admits, however, that seeing every patient would be impossible. In his practice, he dictates between 10,000 and 15,000 reports per year, but he thinks radiologists could set aside more time to meet patients in special sessions.

Patient information could be printed in a brochure or be displayed on a screen in the radiology department, noted Erik Briers, PhD, a patient advocate and prostate cancer survivor based in Haaselt, Belgium. Some Belgian hospitals, for example, have waiting rooms for each imaging modality, with screens showing web presentations about each procedure. To increase the level of patient understanding, it is important to ensure as much information as possible is available.

“There is no one size that fits all,” he said. “For some, those presentations might be too complex already, and for others, it’s only an introduction to what they will want to know.”

Additional information may include patient summaries in radiology reports. Briers added. They would be generated automatically, and would bring the essence of the report to the patient.

The ESR Patient Advisory Group (ESR-PAG) was established in 2013 to bring together patients, the public, and imaging professionals in order to collectively address and leverage developments in the field of radiology. The ESR-PAG advocates for a patient-centred approach in the activities of the ESR, with the aim of benefiting patients across Europe. The ESR is the first medical specialty society to successfully launch a professional patient body group that gathers patient representatives from various disease-specific fields. In 2018, the ESR-PAG launched concrete initiatives to enhance the group’s functioning with a patient-centred approach. More information about the ESR-PAG and its activities can be found at the ESR website: myESR.org/quality-safety/patient-information.
Dose management in paediatric radiology – where to next?

Carers, staff and the public are more and more concerned with the radiation doses that children receive while in our healthcare setting.

Why is it different this time to the previous episode of care, which may have occurred in a different location, why are protocols and therefore dose not the same; what does that mean for me and the outcome of my particular diagnostic interaction, and also, in the long term, with regard to cancer risks? These are challenging questions to us individually and as organisations. Can we confidently, and from a position of confidence, answer these questions in a manner that is reassuring, and do we have the evidence to back up what we are saying?

Though risk-benefit assessment should be scientific and evidence-based, it inevitably includes social, ethical, cultural, and individual preference. The recent ICRP publication 138 on ‘Ethical individual preference. The recent ICRP that children receive while in our healthcare setting. Carers, patients, staff and the public are more and more concerned with the radiation doses

Dose management in paediatric radiology

BY COLM SAIDLÉAR

SATURDAY, MARCH 2, 2019

ECR TODAY | SATURDAY, MARCH 2, 2019

CLINICAL CORNER

Hub & Spoke Model, delivering the right care in the right place, Children’s Health Ireland

Dose management in high dose procedures, and indeed investigate and propose alternative non-imaging solutions where possible. In the last decade, enormous strides have been made to support this position, not just by individuals, but also by entire organisations. Where imaging involving ionising radiation is required and justified, the wider radiology community and various international bodies have provided guidance and regulatory documents supporting and establishing the above basic principle in detail. Implementation of the ICRP concepts of incorporating risk, justification and optimisation into the imaging process has led to the concept of keeping dose as low as reasonably achievable while producing appropriate diagnostic images. This has come full circle and has been consolidated under the Council Directive 2013/59/EURATOM (Basic Safety Standards) and specifically in paediatrics with The Safety Report No. 71 of the IAEA 2012 which highlights and requires the ICRP concepts to be addressed. That is taking a holistic view of the patient’s journey from referral to specialist care, including their entire healthcare journey. Recent work by Kirk et al (EPOS 2018 poster) demonstrated the positive impact that information leaflets have on reducing parental anxiety and satisfaction. Further initiatives include the book ‘The Gentle Way’ published on the occasion of the International Day of Radiology (IDoR) 2015 by the European Society of Radiology and more recently RP 185 (European Guidelines on Diagnostic Reference Levels for Paediatric Imaging) by the European commission 2018 and the ESR Eurosafe Imaging campaign in Europe. These have all enabled and empowered departments and entire healthcare communities to consolidate their policies, procedures, protocols and guidelines while at the same time providing international benchmarking tools and dose reference levels.

This is an agenda item close to my own heart as in Ireland we are currently amalgamating the three existing children’s hospitals in Dublin into one single organisation, Children’s Health Ireland (CHI). CHI will have responsibility for all paediatric care all over the island of Ireland, that is all paediatric patients who have a complicated and serious illness and need specialist and complex care. A hub-and-spoke model is currently being established that will initially be concentrated in Dublin, where a new digital children’s hospital and two new paediatric urgent care and out-patient satellite units will be located on the periphery of the city north and south. These are currently under construction. The primary principle of this network is to conveniently deliver the most acute paediatric services locally, with regional units clearly identified and supported from the centre, with all highly specialised and national services consolidated in one children’s hospital.

This is a unique opportunity for paediatric radiography, interventional radiography and neonatal imaging will highlight dose management in paediatric radiology and that it is the responsibility of all to ensure that the radiation dose that we are exposing children to is appropriate and justified, adequate and optimised for the specific purpose intended, producing diagnostic images that will contribute to effective patient care and management.

Colm Saidléar is lead imaging and radiation protection physicist for Children Health Ireland and Temple Street Children’s University Hospital in Dublin, Ireland.

Refresher Course: Physics in Medical Imaging

Saturday, March 2, 08:30–10:00, Room G

RC 1313 Dose management in paediatric radiology

» Chairperson’s introduction
  C. Saidléar Dublin/IE

» A. The special case of the paediatric patient: risks and justification
  O. Creemen London/UK

» B. Optimisation and technology in paediatric projection radiography, interventional and CT scanning
  V. Tsapaki Athens/GR

» C. Optimisation in the neonate
  M. Dublin/VA

» Panel discussion: Paediatric dose management: are we doing enough for the next generation?

This session is part of the EuroSafe Imaging campaign.
New ideas for established methods; how a moment of your time might change the world

A preliminary study on diffusion tensor imaging of the growth plate

Modern technology has evolved at a rapid pace. Technology has in general been spearheaded by the military and medical specialists have adapted these technologies to their advantage. However, radiology, as a specialty, has struggled to apply new ideas to established methods and go on to employ these in areas of the field.

Neuroradiologists have been at the forefront of developing new magnetic resonance imaging (MRI) sequences that are effective, be it susceptibility-weighted imaging (SWI) to detect blood products, or diffusion tensor imaging (DTI) to estimate the location, orientation and anisotropy of the white matter tracts in the brain. DTI depicts anisotropy based on the law of least resistance. The use of DTI to visualise the nerve tracts in the CNS has been a major breakthrough in helping to map different anomalies and malformations of the brain. But what about other ‘tract-like’ structures in the body with high amounts of water? If DTI can visualise any ‘tract-like’ tissue then it should be possible to use it to visualise nerve tracts, muscle fibres or chondrocytes in the growth plate.

As Claude Lévi-Strauss wrote, “the scientist is not a person who gives the right answers, he is one who asks the right questions.” So, can one visualise chondrocytes and see rows of them with DTI if they are ‘tract-like’?

In endochondral ossification, bone replaces chondrocytes. The chondrocytes are stacked in prominent rows in the growth plate and metaphysis. Closure of the growth plate causes the asymmetry of the chondrocytes, which ultimately disappear as the bone matures. The water-like properties and prominent rows of the chondrocytes in the growth plate should therefore make them detectable with DTI. The signal would be dependent on the chondrocytes’ volume and the length of the rows in which they are arranged. The physical orientation of the rows of chondrocytes could then be visualised as a ‘tract’. If this theory is correct then DTI can function as a biomarker for skeletal growth and maturation (related to age and sex).

DTI is also sensitive to asymmetry. This could be used to show, at an early stage, that bone bridging/closure of the growth plate has begun. The sensitivity to asymmetry could also function as a tool for early detection and mapping of the physiological effects of trauma (fractures for example) which affect the growth plate, causing it to close prematurely. Secondly this can cause the bone to grow in a disproportionate way.

There are many benefits to seeing if the growth plate is open and estimating the chondrocyte volume in the metaphysis. First of all, it can function as a biomarker to see if growth potential remains. Secondly, it could be a predictor of the success of growth hormone treatment for patients with, for example, dysplasia disorders or idiopathic short stature.

Maybe new ideas can become the renaissance of established methods. In my presentation within the MyT3 session on everyday challenges for radiographers and radiologists we will look further into this subject using our experience from diffusion tensor imaging (DTI) of the growth plate: a preliminary study.

Ola Kvist, MD works at the Department of Paediatric Radiology at Karolinska University Hospital in Stockholm, Sweden.
CT system developers make full use of artificial intelligence to boost patient care

The detection of disease on CT has benefited greatly from advancements to artificial intelligence (AI) software during the past year. To make the case at the ECR 2019 technical exhibition, many vendors are dedicating their CT booth presentations to the integration of AI into the modality. The rewards for patient care are visible for all delegates to see during this week’s congress.

With its gaze set firmly on combining AI and CT to enhance care, Siemens Healthineers is highlighting its AI-Rad Companion Chest CT, a software assistant for radiology powered by AI technology. This product is reportedly the company’s first application capable of using AI algorithms to automatically differentiate individual structures on chest CT scans. The algorithms can highlight distinct structures in the thorax as well as spot potential abnormalities. The application’s various tasks include detecting lung lesions, determining cardiovascular risk based on CT coronary artery calcification, measuring the diameter of the aorta, and segmenting individual spinal vertebrae for bone density and fracture analysis. To round out its offerings, the application can automatically generate a standardised quantitative report of the data. Whereas radiologists generally centre their CT interpretations around the primary indication, AI-Rad Companion Chest CT performs a systematic and equal examination of all areas of the chest, potentially finding lesions in regions that the reader may not have made a priority according to Siemens.

Clinicians can incorporate the product into existing clinical workflows, with all scans and supporting information automatically available in PACS through the vendor’s cloud-based teamplay infrastructure. The vendor-neutral application is suitable for use with data from any CT machine, and is currently offered on a pay-per-use basis and will be available in the US and European markets in the spring of 2019.

GE Healthcare is featuring the latest addition to its Revolution line of CT scanners, Revolution Apex. As a next-generation intelligent CT scanner, Apex enlists GE’s Edison deep-learning image reconstruction algorithm to assemble what the company refers to as TrueFidelity images, which are marked by high spatial resolution, natural-looking textures, and low contrast detectability. These images can help boost radiologists’ confidence in diagnosing clinical cases, according to the company. Revolution Apex is also equipped with a new imaging chain and the Quantix 160-ray tube. The components are collectively designed to improve temporal resolution and coverage, as well as provide spectral capability. As a result, the CT scanner can deliver whole-organ coverage, including for patients with elevated heart rates, high body mass index, and compromised renal function, among other conditions.

Keeping in step with previous Revolution CT scanners, Apex produces high-resolution images while maintaining low radiation doses during scanning, GE noted. The company is marketing its Edison reconstruction technology as a work-in-progress. Making its first mark in AI-driven CT scanning, Canon Medical Systems is introducing its Advanced Intelligent Clear-IQ Engine (AiCE) deep-learning image-reconstruction technology. The product can reconstruct low-quality, low-dose CT data into high-quality images.

Applying AI to CT reconstruction permits the use of low radiation dose (on the same level as conventional CT scans) without compromising final image quality, according to the company. The images compare to those reconstructed using the company’s forward-projected model-based iterative reconstruction solution (FIRST). The AiCE algorithm is compatible with the Aquilion One Generations CT and Aquilion Precision ultra-high-resolution CT scanners. Together with AiCE, these systems enable high-spatial resolution CT scan reconstruction between three to five times more quickly than the current gold standard of using model-based iterative reconstruction, Canon noted. The increased reconstruction speed of up to 40 images per second is possible because of the scanner’s Nvidia graphics processing unit boards.

In the case of Aquilion Precision, activating AiCE for scanning results in sharp images with a resolution of 0.35mm and a size of 2.56 x 2.56 imaging matrix, compared with the 0.55mm resolution and 0.52 x 0.52 imaging matrix of standard CT. Canon is awaiting regulatory clearance for the technique. Meanwhile, Philips Healthcare is highlighting the financial advantages of using its IQon Elite spectral CT scanner. Multiple studies have demonstrated the technology’s capacity to increase workflow efficiency in hospitals by reducing the occurrence of follow-up scanning, lowering levels of contrast agent and CT radiation dose, and accelerating the time to diagnosis, according to the company.

“The IQon Elite Spectral CT is the first detector-based spectral CT of its kind to deliver more confident patient diagnoses in the first scan, representing a revolution in CT performance,” said Kees Weidorp, business leader of diagnostic imaging at Philips.

Notable features of the scanner include reconstruction speeds reaching approximately 200 CT examinations per day, radiation therapy planning couch and bariatric table-top for larger patients, and ability to estimate electron density for tissue characterization. Hitachi is showcasing its Scenaria View CT scanner at ECR 2019. Offering both 64- and 128-slice scanning, the device boasts a larger 80cm aperture.
Renewed focus on dose to drive adoption of next generation CT in Europe

Dose awareness surrounding CT use is not a new topic for European radiology, especially given the prominent EuroSafe Imaging campaign launched back at ECR 2014. The era of the long awaited EURATOM Council directive (2013/59) in February 2018, promoting the use of clinical decision support tools, including clinical audit and diagnostic reference levels (DRLs), has further heightened focus on this important issue. Health providers and vendors were aware of this challenge early on, in part due to the United States taking much earlier action on CT dose in 2010, yet progress to address patient dose safety in Europe has been gradual.

Positively and in part due to the early adoption of dose safety in the United States, the current generation of CT systems on show on the exhibit floor here at ECR have a wealth of features focused on dose optimisation. Technological development in CT over the past couple of decades has seen dose rates reduced by over 90 percent compared to basic CT systems of 15 years ago, MBIR technology can reduce patient dose by as much as 90 to 95 percent for the same type of CT scan. Moreover, using these techniques can also provide subjective and objective improvement in terms of image quality. This trend will continue as CT computing gains traction in medical imaging, future generations of CT scanners will be even more powerful, creating further opportunity for dose reduction.

It is not just CT hardware that has changed, however. CT is no longer sold as a system, but as a solution, with a raft of software tools to maximise efficiency of use and to support dose optimisation. Going back less than a decade, most systems had limited support for capturing and reporting patient dose, requiring manual extraction and reporting. Consequently dose monitoring and reporting was often overlooked. Today new CT solutions from vendors include features for integrated dose reporting of diagnostic reference levels (DRL), along with audit, decision support and structured reporting support.

However, as illustrated in the figure on the left, many users are not benefiting from this functionality due to the lengthening lifecycle and replacement cycle of CT equipment in Europe. This could pose a significant concern for providers looking to their CT vendor partners for support in dealing with patient dose safety. For vendors, this will keep dose optimisation a high priority focus, or they will risk potentially losing longer term CT equipment supply contracts.

Combined, these efforts from both providers and vendors should drive renewed focus on patient dose and will likely spur a replacement of ageing CT systems across Europe. For patients, that can be no bad thing.

Steve Holloway is Principal Analyst at Synergy Research Group, an independent supplier of market intelligence and consultancy services. steve.holloway@synergyresearch.co.uk
EIBIR projects spearheading medical photonics research and innovation

The European Institute for Biomedical Imaging Research (EIBIR) supports two multi-disciplinary, technology innovation projects leading towards the development of low-cost, point-of-care imaging systems for breast and thyroid screening, building on key enabling photonics technologies.

**EIBIR Lounge**

The LUCA and SOLUS projects are featured at the **EIBIR Lounge** in the entrance hall. Here, you can find their way into clinics after the conclusion of the projects.

The LUCA project aims to develop and bring into the clinic a state-of-the-art portable device for thyroid cancer screening that enables more specific and more accurate thyroid nodule diagnosis. Increasing the sensitivity and specificity of the screening process is of major importance as current methods lead to a large number of non-diagnostic and/or false positive biopsy results. About 120,000 unnecessary biopsies are performed in Europe each year, resulting in about 150,000 unnecessary surgeries in the next year in Europe, resulting in about 300,000 unnecessary surgeries in Europe each year. The final LUCA project aims to improve in-depth diagnosis of breast cancer.

The SOLUS project is developing a new hybrid imaging system that can detect and classify breast lesions in a non-invasive manner. The new system offers a significant improvement in the ability to differentiate between benign and malignant tumours over current imaging systems. Similarly to thyroid nodule screening, invasive procedures, such as biopsies, are currently carried out in an unnecessarily high number of cases. SOLUS can help avoid such unnecessary biopsies in breast cancer screening by improving the characterisation of lesions in the breast.

The innovative, multimodal tomographic system that SOLUS is developing combines diffuse optical tomography and ultrasound/laser wave elastography to support the in vivo diagnosis of breast cancer. This will achieve a substantially improved in-depth diagnosis of breast lesions with higher specificity, as well as more effective treatment of breast cancer than conventional ultrasound or MRI imaging.

To find out more about the SOLUS project and conference, visit [www.solus-project.eu](http://www.solus-project.eu).

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Growing radiography research: an EFRS Workshop

This year, the European Federation of Radiographer Societies (EFRS) has teamed up with the European Institute for Biomedical Imaging Research (EIBIR), and Radiography journal, for a thought-provoking EFRS Workshop on the current landscape and future potential of radiography research. Understanding the current research environment and the barriers and challenges to the expansion of radiography research is important, of course, but of greater importance is the understanding of why we should grow and develop radiography research.

We need to grow the quality, quantity and impact of radiography research in order to strengthen our evidence base (which for many of our procedures is weak). Similarly we need to meet the challenge of new technologies and working practices head-on with new evidence, to ensure that our patients receive best practice. This will define radiography as an independent, and strong profession, aligned to radiology medical physics and nursing but pursuing its own values and ambitions.

Radiography has now been embedded in higher education in many European countries for more than two decades, and research should be a core function alongside teaching and clinical practice. While some clinical and academic radiography departments are highly research active, some do little or no research. A number of bibliometric studies have shown that radiography publication activity is increasing year on year, but that the majority of articles emerge from a small number of authors and centres.

Some academic departments are managing to effectively combine radiography research and teaching, with publications from several different staff each year; however, the majority of radiography departments have few publications annually, from only one or two staff. The first scenario is sustainable in the longer term, whereas the second is highly vulnerable to retirement or transfers of key research staff to other institutions.

While sustaining on-going research activity has challenges, creating a research culture from scratch requires strong leadership from universities, professional bodies and organisations such as the EFRS, as well as from clinical radiography managers and expert radiographers. Key strategic aims of the EFRS include developing and promoting radiographer research and radiographer-led research, supporting international collaborative research, building research capacity, growing radiographer participation in international congresses, especially the ECR, and creating new research opportunities, and funding opportunities, for radiographers at the European level.

Today’s workshop has been designed to support the development and growth of radiography research at all levels, and offers participants the opportunity to:

1. Appreciate the current landscape and potential opportunities for radiography research.
2. Explore how to improve the links between academic research and clinical service needs.
3. Understand the potential role of EIBIR in supporting and growing radiography research.
4. Appreciate the importance of research dissemination.

Hosted by Prof. Julie Nightingale (Editor-in-Chief of Radiography) and Assoc. Prof. Jonathan McNulty (President of EFRS and Associate Editor of Radiography), this workshop will bring together experts in research and publishing from six different countries across Europe.

Prof. Louise Rainbow from University College Dublin, Ireland, President of the European Federation of Radiographer Societies, and Associate Editor (Europe) of Radiography.

On behalf of the EFRS, we look forward to meeting you at this informative and thought-provoking workshop.

The European Institute of Biomedical Imaging Research (EIBIR) strategic research agenda.

Pamela Zolda, a clinical-academic radiographer, and clinical professor, working across the University of Bradford and the Mid Yorkshire NHS Trust, UK, will be asking an important question about the current and future role of the hospital-based researcher. The clinical research radiographer essential for our profession or facilitating the research of others? Dr. Pamela Zolda, representing EIBIR, will outline how researchers can be supported in building consensus, building successful grant applications, project management, and dissemination activities in her presentation entitled ‘Turning your research idea into reality: opportunities for European funding’. Finally, Dr. Frank Zarb from the University of Malta will argue that ‘Research is nothing without effective dissemination’ and will explore the different publishing options available to radiographers across Europe.

The speakers will then be invited to engage with the audience in a panel discussion, which will focus on the barriers to growing radiographer-led research and how they may be overcome.
The Digital Imaging Adoption Model helps imaging departments maximise value and plan for the future

The Digital Imaging Adoption Model (DIAM) was jointly developed by the European Society of Radiology (ESR) and the Healthcare Information and Management System Societies (HIMSS) Analytics Europe in 2016 for the purpose of supporting healthcare providers around the world to analyse their IT maturity and subsequently plan and implement an IT system enhancement strategy.

Although radiology was one of the first specialties for which computerisation became obligatory for daily work, and is thus already widely digitised, rapid technological developments in imaging informatics and information technology have been disrupting the status quo of standard support systems such as Radiology Information Systems (RIS) and Picture Archiving and Communication Systems (PACS). Electronic health records, cloud based computing, the internet of things, augmented reality, deep learning, are just a few examples. The slow and piecemeal adoption of these new technologies in healthcare institutions leaves room for significant improvement. DIAM is designed to make the adoption of technology in imaging departments more efficient and to offer benchmarks for best practice.

DIAM provides a simple, three-step pathway to enable participating organisations to identify their level of imaging IT capabilities and highlight key areas for improvement. The three-step process consists of: firstly, an online assessment form (tinyurl.com/DIAMSurvey), which must be completed by the participating organisation. This can be done in approximately three hours by radiologists, radiographers, and/or IT-experts, though ideally it should be a joint effort. Secondly, a thorough, quality assurance assessment, completed by HIMSS. The extent of this assessment depends on the DIAM level achieved by the submitting organisation. Finally, a DIAM score and a gap report produced by HIMSS. This score is only shared with the organisation which submitted the data. The DIAM score places the participating organisation within an 8-stage framework: the DIAM framework, with stages from 0 to 7, allows hospitals to gain a clear overview of their existing capabilities, assists in strategic, operational and procurement decisions. If repeated, the DIAM assessment can facilitate the monitoring of progress in imaging IT performance within individual organisations over time. The insights this provides can have both internal and external applications. The hope is for DIAM to achieve similar influence and success to EMRAM but within the specific field of radiology and, in the future, through the Enterprise Imaging initiative, also in other medical imaging domains.

As of December 2018, fifty-eight participating organisations from eighteen different countries in Europe, North America, the Middle East, and the Asia-Pacific region had been surveyed. Leading the way has been the King Abdullah Medical City (KAMC) in Riyadh, Saudi Arabia, which became the first facility in the world to achieve DIAM stage 6. Described by the hospital as a ‘learning opportunity’, the DIAM assessment added impetus to various initiatives which had a positive impact on patient care, for example, the implementation of a VNA, an enterprise-wide Master Patient Index (MPI), cross reporting, analytics etc. As a result of such changes, over 50,000 duplicate records were discovered. Care providers are now seeing single, unified patient imaging history records, which enables them to increase efficiency.

Another improvement brought by DIAM assessment is that, previously, requests for new features and services were frequently made without being fully justified. After the DIAM assessment requests for enhancement are now significantly more likely to be justified, thus ensuring IT value. The KAMC is aiming to build on its success and achieve another global first by achieving stage 7 in the near future.

This and other DIAM success stories shall be highlighted in the Coffee & Talk session today at 09:30 in Room C&T 3.

Next steps and plans for 2019

HIMSS launched an Enterprise Imaging version of the DIAM assessment just before ECR 2019. This complements the existing DIAM radiology model, as shall be explained by Jörg Studzinski, HIMSS Director of Research and Advisory Services, in today’s Coffee & Talk session.

How to take part

If you are interested in participating in the DIAM project, please email diam@myESR.org.
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ESUR: promoting the evolving role of diagnostic and interventional GU imaging

The European Society of Urogenital Radiology (ESUR) is a non-profit educational and scientific association that comprises more than 411 members from 44 countries and aims to improve patient care through the support of teaching, science, research, clinical practice and the quality of service in the field of urogenital radiology.

It includes five committees dedicated to specific areas of interest (female pelvis and pelvic floor; prostate MRI; renal tumours; scrotal and penile imaging and contrast media safety committees).

ESUR organises an annual symposium where innovative developments take centre stage. We also organise one or two annual workshops all over Europe where radiologists can get updates on advances in medical technology and trials to improve their expertise. The 2019 ESUR Annual Symposium will take place in Dublin on September 19–22, and a workshop dedicated to prostate MRI will take place in Rome on May 24–25. Our Contrast Safety Committee regularly updates its guidelines. In addition, the Board of ESUR offers a level III diploma in genitourinary (GU) radiology and supports international collaboration, in Europe and beyond, to help harmonise education, clinical work, and research in the field of GU imaging.

Our society is also interested in scientific work. Radiology is changing fast and GU radiologists know that they have to adapt to new technologies, including artificial intelligence / deep learning / machine learning and collaborative networking. These technologies have the potential to enhance our profession and to make us more efficient, freeing up time for GU radiologists to participate in research and multi-disciplinary meetings and to be more patient-centred.

Three-dimensional printing models are becoming readily available throughout healthcare and may be used for pre-surgical planning, for example in patients with prostate cancer, because they provide a better understanding of lesion size, shape and position within the prostate. In the future, they may influence surgical strategy regarding nerve-sparing, continence, and potency.

Regarding prostate cancer, a few recent studies have suggested an expanding role for MRI. The MSK FIRST study (Rozenblum O et al. Lancet Oncology 2018) confirmed that obtaining a multiparametric MRI before biopsy in biopsy-naive patients can improve the detection of clinically significant prostate cancer but does not seem to avoid the need for systematic biopsy. Elastography shows promise in the assessment of scrotal abnormalities and its precise role should be specified in future scientific trials. Multimodal MRI of renal tumours has shown promise in predicting the histologic subtypes of renal cell cancer and in differentiating renal cell cancer from benign solid tumours. This new need to be confirmed in large multicentre trials. In addition, the role of percutaneous treatment of renal tumours is now well documented and integrated into the management of patients. Radiomics (high-throughput extraction of quantitative features that converts images into mineable data) and radiogenomics (linking of imaging features with genomic data) are newly emerging research areas in genitourinary.

Figure 1: (A) Patient with Classification of Ovarian Cancer (CLOVAR) mesenchymal subtype and an overall survival of 69 months. Texture-based results within each tumour site (i), the inter-site similarity matrix (ISM) (ii), the heterogeneity tree (iii) and the schematic of the dissimilarity of the various sites compared to the ovarian mass (iv). The diaphragmatic tumour implant (at in ii) has the largest dissimilarity compared to the ovarian mass. (B) Patient with CLOVAR mesenchymal subtype and an overall survival of ten months. Texture-based results within each tumour site (i), the ISM (ii), the heterogeneity tree (iii) and the schematic of the dissimilarity of the various sites compared to the ovarian mass (iv). The left upper quadrant (LUQ) (#5 in ii) has the largest dissimilarity compared to the ovarian mass. (B) Patient with CLOVAR

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**AI & ANALYTICS THEATER - Booth 303 - X3**

**Today's topics: March 2nd 2019**

- **10:15 am** Office hours: making AI come alive on the medical device
- **12:30 pm** Lunch and learn: AI on the medical device, a manufacturer’s perspective
- **01:15 pm** Edison platform and Edison services 101 - a medical device manufacturer’s perspective on AI
- **02:15 pm** Emergency room optimization with shock tool kits leveraging machine learning
- **04:15 pm** 7 technologies that will change your breast care treatment

Plus more topics! To get a complete list of today’s talks in the theater, please go to gehealthcare.com/ai-theater

This theater is made possible thanks to collaborations with our partners: [INTEL](#) and [AWS](#)
oncologic imaging. Several studies have shown that radiomics metrics are able to differentiate benign from malignant tumours (such as leiomyoma from leiomyosarcoma), predict tumour aggressiveness in prostate, renal and endometrial cancer, and predict treatment response in cervical and ovarian cancer.

Cancer is a genetically heterogeneous disease and this genetic diversity can lead to the failure of targeted therapies as resistant clones emerge and proliferate. Hence, efforts to characterise and quantify inter- and intra-tumoral heterogeneity in cancer patients might be useful for guiding therapies that are adapted during the course of treatment. Radiomics can map the phenotypic tumour heterogeneity (Figure 1) thus providing a virtual biopsy and avoiding the need for multiple tissue biopsies. For example, in ovarian cancer, wide inter-tumoral heterogeneity exists at the genomic level between various sites of disease in the peritoneal cavity. It is not possible to perform biopsies on each implant; however, obtaining a road map of the heterogeneity of the disease might help to predict drug resistance and outcome (Figure 2).

Furthermore, there are differences in blood flow, cell density and metabolism within and between tumours that can be non-invasively probed with advanced physiological imaging (Figure 2). This is important, because during the development of treatment resistance, various parts within the tumour or different tumour sites within the patient can become more heterogeneous, and may in turn drive treatment resistance. Imaging is uniquely positioned to non-invasively quantify this heterogeneity within and between tumours in individual patients and thus play a key role in delivering precision oncology.

We encourage all practicing radiologists interested or involved in GU imaging to join and participate in ESUR to help shape the future of GU imaging in Europe. For more information on our educational activities in 2019 and beyond, please consult our website at esur.org or visit us at our society booth in the exhibition area. We look forward to meeting with you!

Figure 2: Habitat imaging in a patient with high grade serous ovarian cancer (HGSOC). Phenotypically distinct areas of HGSOC were identified by clustering of Standardized Uptake Values (SUV), diffusion coefficient (D), dynamic contrast-enhanced DCE parameter (Ktrans) and water volume fraction (D) associated with the distinct colour areas were defined by k-means clustering of Standardized Uptake Values (SUVs). The distinct imaging habitats (labelled blue, yellow and green) reflect phenotypic heterogeneity in HGSOC.

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Dr. Marie-France Bevilacqua is the current President of ESUR. She is an academic radiologist with a special interest in urinary imaging and contrast media. She is a Professor of Radiology at Paris-Sud University, France, and works as head of the Department of Radiology in Bicêtre-Paul Brousse University Hospital, Le Kremlin-Bicêtre, France.

Dr. Eva Sala is an academic radiologist with a special interest in cancer imaging. She is Professor of Oncological Imaging at the University of Cambridge, UK. Her current research focuses on integrated diagnostics, through the clinical development and validation of functional imaging biomarkers to rapidly evaluate treatment response using physiologic and metabolic tumour habitat imaging. Her research in the new field of radiogenomics has focused on understanding the molecular basis of cancer by demonstrating the phenotypic patterns that occur as a result of multiple genetic alterations that interact with the tumour microenvironment to drive the disease in several tumours types. Her work integrates quantitative imaging methods for evaluation of spatial and temporal tumour heterogeneity with genomics, proteomics and metabolomics.
European Radiology Experimental’s conclusions on a successful foundation phase and what the future might bring

The youngest member of the ESR journal family, European Radiology Experimental, reached a milestone, indexation in PubMed, within 18 months of publishing its first articles. We asked the Editor-in-Chief, Prof. Francesco Sardanelli from Milan, Italy, how this journey has been so far, and where it is going in the future.

The world scenario is changing. The ESR, even though based in Europe, is more and more becoming an international society. We are trying to adapt the Editorial Board of our journal to this reality by inviting new colleagues from China, Hong Kong, and Russia. However, a lot of work is still ahead of us in this regard, as we need to intensify our relationships with countries in particular with China and South America, but also with India, the Middle East, Africa and Australia. I expect submissions on applications of artificial intelligence to medical imaging will increase, especially from China. In my opinion as the Editor-in-Chief, this will raise the problem of having sufficient numbers of high-level reviewers for these manuscripts, since the standard scientific-clinical expertise will not be enough. For this task, we need bioengineers and computer scientists engaged in medical imaging.

At the moment, since all our parameters show an upward trend, we will also start to pay attention to other details, one of them being the number of citations. Looking at the numbers tracked by our publisher, Springer, we received 31 citations up to December 2018. Considering that only 28 articles were published in 2018, do you see any trends or hot topics? What are your predictions for 2019?

FS: To classify topics for the articles published in European Radiology Experimental is a challenging task. In fact, we could consider at least some components, like imaging technique, organ or system under consideration, in-silico, phantom, in vitro, animal or human settings; standard versus radiomics approach; use of artificial intelligence (machine/deep learning); and the use of augmented reality. Based on the submissions received in the last two years, I would say that innovative MRI techniques, radiomics, and artificial intelligence will become very important topics in the near future.

ECRT: Your lecture in the Coffee & Talk Session on ethical traps in publication is called ‘Ethical aspects during conception of a study’. Have you experienced any major issues in this regard during your editorship? What do you think authors are most worried and how do you deal with it as the Editor-in-Chief?

FS: Every editor is heavily concerned about publication ethics and this includes many different aspects, as well as the responsibility and compliance of other parties, like an Ethical Committee and authors alike. Main issues include the approval of both prospective and retrospective clinical studies, the need for informed consent from patients or respective waivers, methods to present data to patients (e.g. natural frequencies to be preferred over ratios or percentages), the protection of patient privacy, the attribution of authorship, and, lastly, the declaration of competing interests. Only some of them are managed by the Ethics Committee.

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BY JENS BREMERICH

European Training Assessment Programme ETAP 2.0: Report from Basel, Switzerland

The Basel radiology training programme, attracting residents from numerous European countries, is built on the following terms and principles: people (skilled and motivated trainees and trainers), culture (empowerment, blame-free-environment, cooperative leadership), organisation (clear, consistent and transparent rules), content (subspecialised, organ-based expertise), infrastructure (modern facilities, equipment and IT), innovation (research and workflow), and quality control (exams, audits, certification).

In spring 2018, we learned about the new European Training Assessment Programme, ETAP 2.0, for external auditing and certification of residency training programmes in radiology. Although our programme is regularly rated as the best academic training programme in Switzerland, we were curious about areas of further development. Our reason for applying for ETAP 2.0 certification was to obtain an outside perspective and ideas for improvement, to foster critical self-reflection, and to identify blind spots in our view. In May 2018, we applied for assessment and uploaded the online material (questionnaires and videos). The following month, we had seven online interviews, and in July 2018, we received the final results. The complete process was transparent and concise, comprising seven stages:

1. Application form submitted
2. Questionnaires from trainees and residency director, and videos showing the facilities, resources, and equipment, uploaded
3. Material reviewed by assessors, seven online interviews
4. Report drafted by lead assessor and sent to ETAP chair
5. Results reported to the training centre
6. First feedback (on process) received after two weeks
7. Second feedback (on impact) received after six months

We are proud and honoured that we are now certified with the platinum level, the highest level of excellence. Even more importantly, we received a precise analysis of our programme with respect to strengths, weaknesses, opportunities, and threats (SWOT analysis). The recommendations for further improvement, in our case adding training units for leadership skills and scientific tools, were particularly appreciated and have resulted in these features being added to our curriculum.

In conclusion, ETAP 2.0 is an excellent quality control tool that provides precise analysis and an objective outside perspective. The certification process is transparent and concise. The SWOT analysis of the training programme and recommendations for improvement are particularly helpful.

Jens Bremerich, MD, is Professor of Radiology and Residency Director of the Department of Radiology at Basel University Hospital. After training in Heidelberg, Montpellier, Edinburgh, Indianapolis, Basel, and San Francisco, he is convinced that a good training programme is a team achievement that brings together subspecialised experts and is based on clear structures.

The radiology training programme at University Hospital Basel was certified with the platinum level of excellence two months after application.

The ETAP 2.0 is a certificate of excellence for radiology training departments in Europe and beyond.

The certification process is performed virtually through the ETAP 2.0 platform, which enables an easy, objective and quick assessment.

The ETAP 2.0 is a joint initiative by the European Board of Radiology (EBR) and the UEMS Radiology section.

BE CERTIFIED, BE THE BEST
etap@myebr.org

The ETAP 2.0 is a certificate of excellence for radiology training departments in Europe and beyond.
ESOI strives to provide high-quality education in cancer imaging and research

The European Society of Oncologic Imaging (ESOI) was launched in 2012 and has grown from 63 members in its founding year to almost 500 in 2017. In the past year, this figure has more than doubled; with at present just over 1,000 members. The majority of ESOI members work in large cancer institutes and university hospitals. The members’ subspecialisations reflect the broad spectrum of oncology, with a focus on imaging of haematological, gastrointestinal, lung, breast, genitourinary, bone, soft tissue, head and neck, neurological and paediatric cancers, as well as interventional oncology. ESOI is an institutional member society of the European Society of Radiology (ESR) and affiliated with the ESR journals European Radiology, Insights into Imaging and European Radiology Experimental.

The main goal of ESOI is to raise the scientific level and professional knowledge within the field of oncologic imaging.

The society strives to provide high-quality education in cancer imaging and research, not only within Europe, but also beyond. ESOI members come from 84 different countries; 50 of these being non-European countries. In the first two months of 2019, ESOI has already engaged in joint sessions at various annual meetings outside of Europe: the Tumoral Radiology Conference in Cairo, and the first annual Conference of the Society of Oncologic Imaging India in New Delhi. In 2018, for the first time, the Oncologic Imaging Course (OIC) acted as the official joint annual meeting of the OIC and ESOI. A pre-meeting day was organized by and for the young ESOI members and it was an outstanding educational experience for young and old. Together with the European Organisation for Research and Treatment of Cancer (EORTC), ESOI has again held hands-on training courses on the use of imaging in clinical trials. The fully booked course in Heidelberg shows that there is a need for such training.

There is no doubt that the role of radiologists in multidisciplinary teams has increased, and that their findings are crucial for optimal treatment outcomes. Yet a survey among all ESOI members this year initiated by Prof. Emanuele Neri, has shown that not all hospitals in oncology have their radiologists taking part in multidisciplinary team meetings.

The world of cancer treatment is changing rapidly. In the future, it will be more important than ever to understand complex clinical questions. ESOI recognizes this importance and has established strategic alliances with clinical oncological societies like the European Society of Surgical Oncology (ESSO), the European Society of Medical Oncology (ESMO), the European Society for Radiotherapy and Oncology (ESTRO) and the European Society of Digestive Oncology (ESDO).

ESOI aims to create an educational forum where radiologists can meet and exchange knowledge. The very first joint event was a multidisciplinary webinar with ESOI during which a multidisciplinary team of teachers interacted with radiologist and clinician attendees. The ESOI webinars have always been a successful and well-accepted educational format, so ESOI will focus on many more multidisciplinary webinars in 2019, in collaboration with clinical societies, but also with other radiological subspeciality societies.

In August 2018, the very first course for both radiologists and medical oncologists took place in Amsterdam, in joint collaboration with ESMO. The course was a forum where clinicians and radiologists met to interact and gain knowledge of each other’s disciplines. The second edition of the ESOI/ESMO course will take place in Turin. For the third time, ESMO will host ESOI during the ESMO annual meeting, on a course on cancer imaging. With many recent FDA approvals of new targeted therapies and immunotherapies, it is important that radiologists have insights into cancer treatment evolution. One of the aims of the society is to provide education in cancer research. Therefore, it is important for the ESOI academic members to connect with basic scientists (in immunology, genetics, molecular pathology, bio-technology, etc) to understand why and which research will make the difference in cancer treatment and how imaging can contribute. To this end, ESOI will officially partner with the European Association for Cancer Research (EACR). ESOI also became an official member of the European Cancer Organisation (ECOO) in 2018. ECOO consists of professional and patient organisations in oncology and focuses on oncology. Radiologists were already represented within ECOO by the ESR, which has a seat on the board. With the addition of ESOI and ESHI as new ECOO member societies, the position of radiology among clinical professions will be strengthened even more.

The outreach of ESOI to clinical societies has resulted in clinicians becoming official members of ESOI. The board welcomes them as much as it welcomes radiologists who would like to participate or be involved in its activities and contribute to the exciting new developments in oncologic imaging.

http://esoi-society.org

Prof Regina Beets-Tan, MD, PhD, chairs the Department of Radiology at The Netherlands Cancer Institute, Amsterdam. She is president of the European Society of Oncologic Imaging (ESOI), president elect of the European Society of Gastrointestinal and Abdominal Radiology (ESGAR) and a member of the ESR Executive Council.

Are the radiologists in your department involved in oncological multidisciplinary teams?

NO 55%
YES 45%

Why are they not involved?

They are not formally invited by the MDT coordinator
They are invited but do not attend because of their busy schedule for imaging and reporting
They are not interested
There are no MDT meetings organized in our institution
Oncological service is not yet established in our country

50%
15%
15%
21%
3%
Swedish Society of Radiology aims to unify standards and provide guidelines for the whole country

In Sweden, one of the main directions in medicine at the moment is standardisation. The idea is that the same disease should be treated the same way in all of Sweden.

With ten million inhabitants, we are one of the smaller countries in Europe, and with well-developed IT systems, one would think this would not be too hard. Also, the healthcare system is divided into several regions, with several counties within each region and often several hospitals within each county, meaning a lot of competing IT systems and directions of care are co-existing.

The Swedish Association of Local Authorities and Regions is now trying to remedy part of this, in starting a National Clinical Knowledge Support initiative, which aims to have the same guidelines throughout the whole of Sweden. Radiology, as part of a diagnostic team, is one part of this, and Prof Karine Birkund, well known within the SFR, serves in this group, while also a member of the Swedish Society of Radiology.

Two larger national initiatives are being driven by the Swedish Society of Radiology (SSR): iGuide, and a newly started initiative to introduce a common radiological coding system (a Swedish version of RadLex-Loinc). Hopefully, the National Clinical Knowledge Support initiative will serve as a base while trying to incorporate their systems into the Swedish healthcare care. We also hope to address the Swedish pathways of standardised cancer care, which have been in place for a few years now, and which – though the thought is good – come with their own set of problems. As some patients get a fast-track through their disease, others have to take a step back to allow this, since our resources are finite.

Another aspect of the national perspective is that radiology residents in Sweden do not have a national system of which courses to participate in, and at what time in their residency. The SSR and Sweden’s radiology director of studies are collaborating in trying to create a national structure around this issue.

Touching the same issue, Sweden has not had an arena where all directors of the various radiology departments could meet and discuss. Last year, the SSR decided to create an e-mail list of these people, as well as other important figures in the Swedish radiology community, including major players in the private radiology sector. This e-mail list is used today as a discussion forum, and in 2019 we will arrange the second Radiology Directors’ Day at our annual meeting.

More locally within our society, discussions are being held on how to proceed with our national home-page, our member journal and our annual national radiology meeting. Generally, these have been run as well as the society’s board without reimbursement, and in our spare time, but as the pace of society is increasing, this is not sustainable for the future. What to replace it with? We do not yet know.

As in most of Europe, though perhaps not at the same level, Sweden is experiencing a scarcity of radiologists. Tele-radiology is increasing, as are multidisciplinary rounds and a need for all of us to become more subspecialised as general radiologists. More is asked of us, and we are becoming fewer. Hopefully AI will remedy some of this – but even though there is a lot of hype at the moment, we have yet to see real, practical help using AI in everyday care. Are there parts of radiology where we should look into changing our routines? Can we let the orthopaedic surgeon interpret post-operative x-rays? Should we train radiographers to take on radiologists’ tasks in areas other than ultrasound? We have no answers – but the questions need to be asked.

At the Spanish Society of Medical Radiology (Sociedad Española de Radiología Médica – SERAM) we comply with the priority objectives of our society by strengthening the training elements of our partners and by proposing new tools for the development of our specialty. We believe in our obligation to anticipate the changes that will impact our profession and work environment in the future, and make an effort to share these ideas with our partners and patients.

At SERAM, we see a ‘crisis’ as an opportunity. Evolution and adaptation have been distinctive features of our specialty since its birth more than 100 years ago. The assessment of the future impact of AI is especially difficult to quantify. This new set of tools has had a great impact on the communication media in Spain, and also promises to revolutionise the radiological technology industry with which we interact.

The AI ‘crisis’ and its impact on our profession

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Leading the training efforts in AI has thus become a priority for SERAM, but we are also working on the design of a set of strategies that will make us the natural interlocutors with technology industries and public administrations, becoming a new strategic ally for both kinds of organisations.

Also, we are developing several initiatives led by our society, such as our first online course on AI for radiologists, and we have also developed basic courses for training our professionals in advanced medical image manipulation and processing, not forgetting the use of new tools such as biomedical 3D printing.

As a summary, things are starting to change in Sweden, both at the national healthcare level, and in our society. The next couple of years will be interesting and will set the stage for a new and hopefully more cohesive radiology.

Henriette Ståhlbrandt, MD PhD, is president of the Swedish Society of Radiology and general radiologist at Region Skövde County, where she also serves as Assistant Director of the Radiology department.

SERAM and the evolution of radiology

Regardless of their geographical location, all radiologists deal with new technologies daily, including tools that, in some cases, show a certain capacity to transmute our work environments.

The board of the Swedish Society of Radiology met in Malmö, Sweden.

As a summary, things are starting to change in Sweden, both at the national healthcare level, and in our society. The next couple of years will be interesting and will set the stage for a new and hopefully more cohesive radiology.

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Creating a new scenario with closer contact with patients is one of the most desired goals of SERAM. We believe that we must walk towards a deeper collaboration with patients, improving their involvement in our activities.

A successful example of this idea was found during the celebration of the XXV SERAM Congress, held last year in Pamplona. There,
It became very clear that patients are very interested in, and engaged with, the technology on Twitter, the visibility of which has multiplied fivefold is a good example of this. In close collaboration with universities and researchers, we are developing a new tool called Patient Experience in the radiological environment. With this tool, patients experience the opportunity to experience first-hand, through Virtual Reality, the sensations and impressions of the most common radiological tests. This has helped us better understand the importance of preparing our patients. It creates a new way to deal with radiological examination, fun and entertaining way providing the fundamental information and virtual reality helps them become more familiar with the unknown of patients in our radiology services. Patients feel more relaxed and more informed when using this kind of tool.


We intend to expand these activities into schools, colleges and universities, including the educational radiology of the general population and to highlight new professional scenarios, in order to increase the best professionals in our specialty.

Faculty of Radiologists in Ireland focuses on training and education

The role of the Faculty of Radiologists is to lead, educate and provide support for all consultants and doctors in training, working in the specialties of clinical radiology and radiation oncology. Our remit spans the fields of diagnostic and interventional radiology, and radiation oncology cancer treatment, helping to ensure that the patients who use these services have the best possible experience and care.

The faculty is led by the Dean, Dr Niall Sheehy who works as a consultant radiologist at Ireland’s largest hospital, St James Hospital in Dublin. At a national level, the faculty represents our members by promoting quality standards and strives to ensure that the advances in the science of clinical radiology and radiology education are recognised in health policy.

Training and Education

Radiology trainees in Ireland hold the grade of specialist registrar (SpRs). The training scheme is led jointly on a national basis by two consultant radiologists – an educational lead and a training coordinator who works closely with the national coordinating team.

There are nine teaching hospitals accredited for radiology training in the country – five in Dublin, and one each in Cork, Galway, Waterford and Limerick. Each of these has a local training coordinator who works closely with the national coordinators. Training is subsidised by a division of the government’s health service executive known as NTCP (National Doctors Training and Planning). NTCP provide baseline funding to help open the training radiology programme.

The basic funding level has remained static over several years. Despite rising costs associated with training, NTCP provide additional funding through developmental funding for defined projects. This past year, the faculty successfully applied for additional funding through developmental funding for definition projects. This past year, the faculty successfully applied for additional funding through developmental funding for defined projects. This past year, the faculty successfully applied for additional funding through developmental funding for defined projects. This past year, the faculty successfully applied for additional funding through developmental funding for defined projects.

Quality Improvement Programme

Much of the local work on radiology quality improvement has been inspired by Dr Adrian Brady, Past Dean of the Faculty, and current Chair of the ERS’s Quality Safety and Standards Committee. The primary focus of the past year has been the application of the NCCP (National Clinical Effectiveness Committee) to gain National Clinical Approval (NCA) status for the Radiology Quality Improvement Programme. NCCP are a branch of the Irish government’s Department of Health. The application provisionally succeeded, with a few minor amendments still to be made before it gets full ministerial endorsement. Open disclosure plays an important role in all audit programmes and the faculty’s Open Disclosure Guidance document has been incorporated into the document submitted to NCCP. Participation from all sites is a prerequisite for the success of radiology’s QI Programme – participation in all categories of radiology activity has steadily risen over the past year but is still at a relatively low level. Some of the low participation may be an issue of under-recording due to lack of familiarity with the operational platform (MOADS).

Two other methods to increase participation were introduced by the faculty board. The first was to establish a measurement system whereby QI activity counts towards workload productivity figures for each radiologist. The establishment of such a measurement system requires an upgrade in RIS functionality, which is being explored with the equipment vendor, Change Healthcare. The second method to increase participation was the translation of QI Programme into credit in the PCS (Professional Competence System). Provision of images in respect of this has been received from the Medical Council.

Once NCA status is obtained, participation in QI activity will become mandatory. A significant concern that many radiologists in Ireland have about QI activity is that participation against legal discoverability of QI data is not watertight according to the wording of current draft legislation. Life cycle learning has provided an interim solution to this issue. This means that the storage of any personal information in connection with patients or radiologists arises from Q1 records after a period of six months.
BY ANASTASIJA MITOVSKA

Modernisation and public communication are key aims for Macedonian society

Last year was a busy one for the Macedonian Society of Radiology (MSR). There was quite a full schedule of activities, since we are a society that unites radiologists from the private and public health sectors.

The number of members is, however, pretty constant (around 70), which is due to the staff turnover not being as dynamic as it should be. The MSR held its regular activities, such as expert meetings for sharing experiences and introducing new diagnostic methods. One of the most visited events this year was the expert meeting with subjects in the field of mammography and musculoskeletal radiology, as well as one very interesting topic on the subject of management of costs in public health institutions (presented by Dr. Kristina Mitreska MSc). The lecture gave an insight into what it takes to successfully manage big public health institutions. The meeting overlapped with the International Day of Radiology, which we traditionally celebrate with these types of events.

The current management team of the MSR is focusing on various points of interest, but the most important is improving and modernising the radiological approaches in diagnostic and interventional treatments. The MSR president, Dr. Nadica Mitreska, PhD, together with the University Clinic of Radiology, also provides support and training to radiological technologists who are specializing in CT and MR diagnostics. She represented the MSR as an invited lecturer at ECR 2018, speaking within the postgraduate educational programme, as well as at the European parliament, on invitation from Biljana Borzan MEP, as a representative of the European Society of Radiology (topic: From health policies to practice).

Prof. Mitreska was also a moderator of a radiographers’ session at the European Congress of Radiology, with her own lecture. She presented the MSR at the Balkan Congress of Radiology, which took place in Kushadasi, Turkey where five more radiologists from Macedonia also participated with their own papers. The activities of the MSR and the University Clinic of Radiology can be seen in the Business Directory of Macedonia 2016/2017.

One of the biggest issues in the Macedonian health system is the outflow of doctors from Macedonia to western European countries. This is a subject that touches all levels of healthcare and all personnel. However, there is not a big outflow of radiologists; approximately three doctors left the country in 2018, but still this presents a future challenge for the further development of a solid healthcare system.

We are trying to introduce the wider medical public to radiology as one of the most progressive fields of medicine, as well as its challenges and news, through various channels of communication. One of these channels, which we found to be the most effective, is the newsletter issued by the Doctors Chamber of the Republic of Macedonia and the Macedonian Doctors Association. Through articles, we are trying to get radiology closer to young doctors and interest them more in this field.

Anastasija Mitovska, BFin, is a volunteer at the Macedonian Society of Radiology.

Professor Nadica Mitreska, President of the Macedonian Society of Radiology represented the society at the XVIth Balkan Congress of Radiology in Kushadasi, Turkey.
Special Exhibition:
Annette Kelm
Tomato Target

KUNSTHALLE
1070 Vienna, Museumsplatz 1
www.kunsthallewien.at

Annette Kelm, Tomato Target, 2018 © Courtesy Annette Kelm and König Galerie, Berlin
WHAT’S ON TODAY IN VIENNA?

SATURDAY, MARCH 2, 2019

Theatre & Dance

Die Perser
by Aischylos
AKADEMIETHEATER | 20:00
1010 Vienna, Lisztstraße 1
Phone: +43 1 51444 4145 | www.burgtheater.at

Hiob
based on the novel by Joseph Roth
BURGTHEATER | 19:30
1010 Vienna, Universitättringer 2
Phone: +43 1 51444 4145 | www.burgtheater.at

Ladykillers
by Elke Körs and Maria Caleita
KAMMERSPIELE DER JOSEFSTADT | 15:00
1010 Vienna, Rotenturmstraße 20
Phone: +43 1 42 700 300 | www.josefstadt.org

Alles für’n Hugo
Homage to Cissy Kraner and Hugo Wiener
by Katharina Stroller
RABENHOF | 20:00
1030 Vienna, Rabengasse 3
Phone: +43 1 712 82 82 | www.rabenhoftheater.com

Der Untergang des österreichischen Imperiums
by Ed Hauswirth and Ensemble
TAG | 20:00
1060 Vienna, Gumpendorfer Straße 67
Phone: +43 1 5865222 | www.dastag.at

The Bauer als Millionär
by Ferdinand Raimund
THEATER IN DER JOSEFSTADT | 19:30
1080 Vienna, Josefstädter Straße 26
Phone: +43 1 42 700 300 | www.josefstadt.org

Tuesdays with Morrie
by Jeffrey Hatcher and Mitch Albom
VIENNA’S ENGLISH THEATRE | 19:30
1010 Vienna, Josefsgasse 12
Phone: +43 1 402 12 60 0 | www.englishtheatre.at

Concerts & Sounds

Concentus Musicus Wien
Stefan Gottfried, conductor and piano
F. Mendelssohn Bartholdy: Overture ‘The Hebrides’, op. 26; L. van Beethoven: Concerto for piano and orchestra no. 4 g major, op. 58, symphony no. 6 f major, op. 68 (‘Sinfonia pastoreale’)
MUSIKVEREIN | 19:30 | GROSSER SAAL
1010 Vienna, Bösendorferstraße 12
www.musikverein.at

Shake Stew (Austria/Germany)
PORGY & BESS | 20:30
1010 Vienna, Rennwegasse 11
www.porgy.org

Hot Jazz Ambassadors
Traditional Jazz, Blues
JAZZLAND | 21:00
1010 Vienna, Franz-Josefs-Kai 29
www.jazzland.at

The Lazy (AUS)
CHELSEA
1080 Vienna, Lerchenfelder Gürtel, U-Bahnhöfen 29–30
www.chelsea.co.at

Swan Lake
by Rudolf Nurejew
STAATSOPER | 19:30
1010 Vienna, Opernring 2
www.wiener-staatsoper.at

I Am From Austria
Musical with songs by Rainhard Fendrich
RAIMUNDTHEATER | 19:30
1060 Vienna, Waagasse 18-20
www.musicalvienna.at

Bodyguard
by Lawrence Kasdan & Alexander Dicleris
RONACHER | 15:00 + 19:30
1010 Vienna, Seilerstätte 9
www.musicalvienna.at

Opera & Musical Theatre

War and Peace
by Daniel F. E. Aubert, Franz von Suppé and others
Arranged by Alexander Doent
With Angela Kirchschlager, Erwin Steinhauser, Edda Andrea Graf (piano)
KAMMEROPER | 19:30
1010 Vienna, Fleischmarkt 24
www.theater-wien.at

Der Mann von La Mancha
Musical by Mitch Leigh
Conductor Lorenz C. Aichner
VOLKSOPER | 19:00
1090 Vienna, Währingerstraße 78
www.volksoper.at

Please note that all performances, except at Vienna’s English Theatre, are in German.
People & Places
The overall aim is to show attendees how innovative IR is and convince them that they should pursue a career in IR, according to Prof. de Bucourt. "IR is part of the radiology family. Future excellent diagnostic imaging and minimally-invasive therapies go hand in hand. The ECR is the best place to find young colleagues from all over the world and promote young talent for IR at a very early stage during their careers, when they may have not yet chosen, or do not know, or have not yet gathered sufficient personal hands-on experience on IR to choose the 'right path','" he said.

Besides the demonstration of high-end procedures using the best simulators available on the market, the Cube showcases the use of modern, yet-to-be-commercialised technologies for providing remote proctoring.

The Cube provides training for a large variety of skills, including basic handling of catheters, sheaths, wires, balloons and stents, as well as probing vessels from all over the anatomical spectrum in physical anatomy models and in dedicated IR simulators, as well as embolisation, aspiration, thrombectomy and closure devices, and many more.

Participants can acquire knowledge in an IR environment, for example with the angiography mock-up, in which a real angio suite experience can be simulated on the spot and interaction with radiographers can be trained. There is also a space dedicated to virtual reality.

Apart from intense, daily, hands-on simulator training each morning and afternoon, basic cases and more challenging cases are discussed. Around noon each day, experts are invited to ‘the event’ to provide special daily content talks and share so-called ‘Epic Fails and Creative Solutions’ cases with the audience.

"It is in challenging situations where things may not always proceed as originally planned and where new, creative solutions may need to be found, that so much can be learned," Prof. Loewe said.

Many renowned speakers share their experience, including Prof. Hans Henkes, Prof. Thomas Schmitz-Rode and PD Dr. Eberhard Siebert, who have again accepted the invitation to take part. Additionally, more than 30 industry partners contribute to this year’s programme.

For those interested, places are still available at the Cube. Simply visit to register and attend sessions.

The Cube welcomes ‘the Silicon Valley of IR education’

By Mélisande Rouger
Room A was packed for the battle of the Greek Gods, Mount Olympus vs. The Underworld, at the beloved Image Interpretation Quiz.

ESR membership record tops off successful year for the society

Report from Bernd Hamm, Chairman of the ESR Board of Directors

The ECR traditionally marks the turn of the new working year for the ESR. The most important milestone in 2018 was certainly our membership record: we have surpassed the 100,000 mark and now count 101,154 members from 163 countries, in comparison to 75,502 in 2017 (+34%). The number of radiographer members increased by even 178%, from 1,567 to 4,359.

ECR attendance has steadily risen, too. I had the honour and pleasure to chair two congresses, ECR 2015 and 2018. It is amazing to see how ECR has grown from one congress to another in terms of content and participation. Including live online viewers, ECR reached 32,666 attendees in 2015. By 2018, the number had grown to 18,474. ECR cannot only be watched via live stream, but also throughout the year at ecronline.myESR.org. Therefore, including online viewers after the congress, ECR 2018 attendance was 38,869. Thanks to a collaboration with the Chinese Society of Radiology (CSR), 500 presentations of ECR 2018 were translated into Mandarin and have been available on the CSR website and on ECR Online. These translations received more than 700,000 views via the CSR website.

Regarding content, ECR 2015 saw innovations such as restructured session formats, with educational sessions being grouped as ‘E3 – European Excellence in Education’, reduced speaking time for scientific papers and more sessions and attendees. Furthermore, we introduced keynote lectures to scientific sessions and reintroduced the slogan for the ECR poster (‘Radiology without borders’ for ECR 2015). For ECR 2018, we launched the new scientific session format ‘My Thesis in 3 Minutes’ (MyT3), the radiographer support programme ‘Shape your Skills’, the open forum sessions ‘Coffee & Talk’, ‘The Cube’ (interventional radiology) and other new buildings forming the ECR City. These have been continued and expanded on this year.

ESOR, the European School of Radiology, is clearly one of our best-known educational initiatives. Since 2006, ESOR has offered 34 courses, seminars and tutorials and 743 scholarship and fellowship grants, thereby attracting 22,572 participants. To make ESOR even more broadly accessible, the vision is to offer 50% onsite and 50% online courses in the future.

The ESR also launched ‘ESR Connect’, with high-quality online content such as news, live webinars, interviews, roundtables and other types of radiology education. You will certainly have noticed our ‘ESR Connect’ studio here in the ECR City and maybe even gave an interview yourself.

Following repeated demand to bring ECR also ‘in person’ to those who are unable to come to Vienna, we created ‘Best of ECR’. The initiative will bring some of our best speakers to national congresses worldwide.

Finally, I would like to invite all ESR full, honorary, radiology resident and retired members to join the ESR General Assembly in Room N tomorrow at 12:30 to inaugurate the new ESR working year.
Prof. S. Nahum Goldberg from Jerusalem received his certificate from ESR President Prof. Lorenzo E. Derchi after he delivered the Josef Lissner Honorary Lecture "Systemic effects of image guided tumour therapy: have we opened Pandora’s Box or found the Holy Grail?"

Italy is one of the guest countries at ECR 2019, and Italian experts highlighted their scientific achievements with a focus on emergency radiology. SIRM President Prof. Roberto Grassi from Naples received a certificate from ESR President Prof. Lorenzo E. Derchi.
THE CUBE
DC Tower
CUBE 2.0
Interventional Radiology at ECR 2019