In 1993, the world market for contrast media was already estimated to be worth $3 billion. In 2001, an astonishing 12.2 million contrast medium-supported CT studies were carried out in Europe alone. Currently, the overall sales of contrast media are estimated to rise to $915 million in Europe in 2008. In its brief history, two major developments occurred:

- A switch from hyperto low-osmolar iodinated agents (late 80s), after costs on the latter dropped.
- The widespread introduction of MRI contrast agents (90s), which largely accounts for the reduced market share of iodinated contrast media sales, from 91.7% in 1992 (world: non-ionic agents) to 60.7% est. (Europe) in 2008.

While many more compounds have been approved since – for use in the various imaging modalities – with the exception of the advent of ultrasound agents in Europe (1991) these are largely for use in specialist or research applications, e.g. intra-vascular (blood-pool) or tissue-specific (targeted) imaging.

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New powerful alliance seeks to delay and amend legislation

A new, powerful alliance, comprised of leading politicians and healthcare groups (see box), aims to pressure EU Authorities to reverse the controversial directive 2004/40/EC (EMF)*. All the organisations involved in the new Alliance for MRI fear that the planned implementation of the directive, which is to be incorporated into national legislation by April 2008, will prevent the use of MRI for interventional procedures and, in essence, will mean the end of diagnosis of, treatment for, and clinical research into cardiac disease, cancer and neurological diseases with MRI technology.

G P Krestit, Professor of Radiology at the Erasmus MC, University Medical Centre, Rotterdam, points out that for over 20 years MRI has been used for examinations of over 500 million patients – without any proof that it constituted a danger to either health workers or patients, and where the upper limits set out in the directive have, in some cases, been exceeded more than a 100 times.

Medical Progress and Research must not be hindered

There can be no doubt that the authors of the directive, which aims to prepare the safety and health particularly of healthcare workers by protecting them from the dangers of physical agents (electromagnetic fields), cannot possibly have intended to make the use of MRI practically impossible, thereby preventing around eight million MRI examinations annually within the EU, 400,000 of which are carried out on children and 80,000 on patients under anaesthesia.

In a very moving statement Ingele Meulenbergs, who had suffered a brain tumour and is now a representative of the EFNA, explained that the use of MRI for her meant the difference between life and death. ‘I would like other people, with or without disabilities, who are not as yet diagnosed or treated, to have the same chance that I have had.’

Cops hunt ‘cash for ops’ surgeons

France – The country’s health ministry is facing growing calls for a major inquiry into alleged extortions that surgeons have been demanding huge cash payments from patients keen to jump hospital waiting lists, and for charging exorbitant fees for ‘private’ operations.

In some cases, the sums demanded have been up to 15 times higher than the tariff scale agreed by the Sécu, France’s social security system. Surgeons in the Paris area are alleged to have been running private practices so lucrative that they have pocketed up to €500,000 a year, yet work only two half-days a week. One Parisian woman revealed that a surgeon asked for a cash payment from her 79-year-old husband when he was lying on the operating table. The scandal surfaced when a radiated factory worker from Chalon-sur-Saone, in the central Bourgogne region, blew the whistle on the ‘under-the-table’ payments after revealing that a heart surgeon had demanded €5,000 to operate on him. So far, although it has begun an
Lab on the tip of the world

The Smiths Medical High Altitude Laboratory is open for business – 3,400 metres up Mount Everest

The Smiths Medical Group, has opened the world’s highest medical research facility. Located at an altitude of 3,400 metres above sea level, the Smiths Medical High Altitude Laboratory is housed in a 10.2m glass dome on the peak of Mount Everest, the world’s highest mountain.

The Laboratory, located in the Sherpa region of the Nepal Himalayas, is the highest permanently manned building in the world. It is used to conduct research on a variety of topics, including the effects of high altitude on human health and the development of new medical technologies.

The Laboratory is equipped with state-of-the-art medical facilities, including a medical clinic, a laboratory, and a dormitory. It is staffed by a team of medical professionals, including doctors, nurses, and researchers.

The Laboratory is part of the Smiths Medical High Altitude Research Program, which is supported by the Nepal government and is funded by the Smiths Medical Group.

The Laboratory is used to conduct research on a variety of topics, including the effects of high altitude on human health and the development of new medical technologies. The Laboratory is also used to conduct training sessions for medical professionals.

The Laboratory is open to the public, and visitors are welcome to tour the facility and learn about the research being conducted.

European research faces financial squeeze

By Anthony Bannister

The European Union is facing a financial squeeze that is threatening to undermine its ability to conduct research and development.

The EU has set aside funds for research and development, but these funds are not increasing at the same rate as other expenditures. This has led to a situation in which the EU is facing a financial squeeze that is threatening to undermine its ability to conduct research and development.

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The Netherlands roundup ...

By EH correspondent Michiel Bloemendaal

For many years, in almost all Dutch hospitals, assistant-doctors have worked alone during evening, night and weekend shifts, when the responsible physicians are not available. They man accident and emergency units, must learn for themselves on general wards and often face life and death questions.

According to a study from Groningen University, one in five assistant doctors have a burnout, while 40% of them suffer fatigue. The chances of a qualified specialist seeing a hospital patient are very small. Often the specialist is not in the hospital after 'office hours', or is on vacation, or at a congress, and therefore hard to reach. Many young hospital doctors see themselves as 'production slaves'. They are also afraid to criticise specialists, for fear of losing their jobs. The Dutch Order of Medical Specialists is 'choked' by these findings.

Blunders by assistant-doctors

Every year, doctors in training to specialise in medical fields make 1,000 mistakes – some with very serious consequences for patients. The study found that fatal mistakes in diagnosis were made in determining certain types of cancer. Also deadly mistakes were made in determining the right kind of medication. The result of a bad relationship between an assistant doctor and a qualified gynaecologist was the death of a baby.

According to the University of Groningen many of these mistakes could have been prevented: they are often the direct consequence of long working hours, high pressures and the too great responsibility of assistant doctors. In addition, assistant doctors not always well-taught by specialists.

Wireless on the Web in bed

Increasingly, Dutch hospitals are offering patients wireless internet access. At the Usselland Hospital, in Capelle, for example, patients in bed can use their laptops to surf the net or send e-mails. It was simple for a hospital to facilitate this, because a number of systems were already available for the staff to work wirelessly. A simple adaptation gave patients the same option. However, patients are not allowed to use a GSM-telephone, because they interfere with medical equipment.

The end of scan, stop, adjust. Scan, stop, adjust...

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Seeking security

The majority of Dutch hospitals want to employ more security guards and install more video cameras, according to a survey of a large group of hospital managers. The managers said that, because of the cost of this, they would ask the government for funding. Presently, hospitals pay about €50 million annually on their security, but they believe this is not enough to keep them safe.

An eye on private clinics

Following the death of a 20-year-old woman treated with liposuction, from 2008 the Dutch Inspection on Healthcare (IGZ) wants all private clinics to supply it with medical quality and performance data. The goal is to improve the checks on the private hospitals. Patients will be able to use the data to choose a clinic or hospital. Those that do not perform well are to be investigated.
The European Forum
Volume 16 Issue 2
January 2007

The use of dual-source computed tomography in radiology is having quite a broad, positive effect on healthcare system. It facilitates a detailed examination of the heart without using catheters, in many cases making invasive cardiac diagnostic procedures obsolete. From this, we can expect a significant improvement in patient care. 'Reducing the focus is on new machines with larger numbers of detectors that should increase spatial resolution even further, while lowering radiation exposure.' Rapid progress in steam and metal detectors in the lymph nodes microscopically. Cell identity and quiescent centres of inflammation in organs at a very early stage. The introduction of 3-Tesla magnetic resonance imaging has been an important topic in recent years. The introduction of 3-Tesla magnetic resonance imaging has posed numerous new research opportunities and questions that, previously, were abhorrent for technical reasons. Now 7-Tesla MRIs are available, significantly increasing the number of new opportunities. They provide ever new, fascinating details on the functioning of tissues. All in all, new MRI technologies are used for researching cancer.

"There is an urgent need to acquire at least two 64-slice CT scanners. This would allow cardiac and peripheral blood vessels examinations to be performed. The current policy of buying angiography and multi-phase MRI, which are not covered by the budget of Government’s official estimation – endorsed, several months ago by the Health Minister, without the initiative and investment programme Optimisation of Radiology Services in Lithuania 2006–2010. This programme, in which all CT scanners in hospitals that provide emergency services, and very closely the radiology emergency services, is absolutely necessary. The CT examinations will be urgent and definite diagnoses in emergency services, and for patient allocation in the right department,' Dr Tamsoniunas explained. The existing cost of a CT investigation (about 50 euros) is definitely inadequate, even to cover the costs of a very simple (one or two slices) CT investigation and this valuation is not differentiated. It means, that the more often a sophisticated CT scanner is used, the more financial loss is ‘gained’ by the institution. Unfortunately, even this inadequacy valuation is not ended. "To get one CT scanner is easier than the current million–euro political debate." Dr Tamsoniunas pointed out. Access to specialised healthcare is fundamental. MR imaging costs are considerable. Choosing the right technology, and fast, cheap, non-contrast, non-invasive, MRI – I would argue that – is very important and limited to the calendar year, according to the budget, the biggest technology gap in Lithuanian radiology is in nuclear medicine – SPECT. Currently, a large number of 18-flourine labelled PET scanners are over 20 years old and only one rationally selective SPECT gamma camera (in Kaunas Regional Radiology Centre) and one more are over 10 years old. Not only does it mean an serious gap, but also the first steps towards the future, which in Lithuania is very unsatisfactory. MR angiography and multi-phase MRI wide-scale investigations in Lithuania are almost never performed in Lithuania. Four in eight MRI units are in private hospitals and have low access.
German Radiology Congress?

Refresher courses and workshops

The very diversified topics and contents have been designed to fit a three-year period. Courses include paediatric radiology or neuronradiology, with others focused on procedures such as ultrasound scans, the professor explained. Training also will be provided in some of the increasingly important interventional procedures, e.g. carotid artery dilation.

Other highlights will include a highly interactive basic radiology course for doctors, and hands-on workshops in which new procedures, such as image-controlled therapies, can be practised on dummies. “The use of stents to treat constrictions of cerebral vessels, of the renal arteries and pelvic and leg arteries is attracting particular interest. Vertebroplasty – an interesting therapy option for osteoporotic patients – is also in the programme, and the courses will be rounded off with a chance to practise CT virtual coloscopy,” the professor added.

Given the current glut of junior radiologists in Germany, we asked what the congress might do to stabilise this situation. “Attracting young doctors to radiology is an important and continuous process. It depends on the ability to communicate the outstanding perspectives of this medical discipline and on the ability to offer solid and structured training. Young doctors who decide to specialise in radiology must be given the chance to learn all aspects of in- and out-patient radiology during training. The German Radiology Congress acts as a role model, but the implementation should happen during daily routine in a hospital.”

Today radiology is an integral part of many therapies – particularly MIS. We asked what other areas are similarly developing and what the future holds for the interventional radiologist? “Procedures to open and close vessels are already integral parts of optimum patient care, such as dilation of cerebral vessels to prevent strokes, treatment of cerebral bleeds and treatment of smoker’s leg,” Prof Ulrich Moedder pointed out. “There are also many different possibilities for interventional radiology to treat back pain. Interventional radiologists can also administer local therapy for defined tumours, such as liver metastases, as well as to treat infections or abscesses in the lung or abdomen. In the future, when we’re able to make diseases visible on a cellular level, we will be able to treat them earlier. So radiology will make an important diagnostic and therapeutic contribution towards patient care in various areas.”

For now, Dr Tamosiunas’ main concern is the introduction of a SPECT scanner to the Radiology Centre. As this is a first for Vilnius University Hospital, there are additional needs: a qualified physician, sufficient SPF funding, new accommodation, etc. This year the doctor expects that the Ministry of Health’s working group in charge of radiological examination costing will make the right decisions about the indications for those examinations and their costs. Convinced as he is of the SPECT and other equipment would not only provide physicians with examination results, but also maintain the new equipment and new jobs. Otherwise, it will become just another staff workload and, in due course, present new problems.

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Small patients, big needs

Children are not small adults. As well as special technical requirements, their treatment needs particular handling by the radiology team.

In Europe, qualifications to become a paediatric radiologist are not too consistent. According to the report Radiological Training Programmes in Europe, produced by the European Association of Radiology (EAR), countries such as Norway, Poland, Portugal, Italy and Greece do not require radiologists to train for paediatric radiology. However, Germany, Ireland and Romania require three-year paediatric radiology training, whilst some other countries require five years of training.

Due to special indications and particularities of child anatomy, paediatric radiology calls for considerable experience as well as a trained, diagnostic eye. The internet also offers individual training offers and opportunities for experts to exchange ideas, reading lists and research material to help with case studies. For example, the website www.pedrad.info, accredited by the American Roentgen Ray Society (ARRS) and the Radiological Society of North America (RSNA) offers comprehensive training and links, as well as a list of paediatric radiologists working in hospitals and clinics in Europe and the US.

Apart from specialist medical knowledge, dealing with young patients also demands a way of explaining things that is appropriate for children. Quite often the children’s fear of examinations that involve large equipment, such as CT or MRI, is bigger than the pain they might be experiencing. Children’s books, such as comics about a little heroine MAXX (e.g. ‘That’s me – MAXX’) published by Schering, explain the function of CT and MRI examinations in funny stories, so children can find out what happens in the big tube, who takes the pictures and why looking still is so important. Parents also need to receive full information, so they can adequately prepare a child for examination, as well as have reassurance themselves, particularly concerns about radiation exposure that might be unheard.

Technically there have been rapid developments in recent years that offer many diagnostic and therapeutic chances for children. For example, the LightSpeed Volume Computer Tomograph (VCT), made by GE Healthcare, facilitates the non-invasive diagnosis of cardiac defects in babies and children, e.g. congenital. Due to the detailed 3-D depiction of the heart and coronaries, plus fast image acquisition in less than five heartbeats, this method provides a real alternative to catheter examination. The Panorama 1.0 T MRI scanner, from Philips, offers a particularly child-friendly solution for MR examinations, because the completely open system counteracts claustrophobia in patients and, even more important, children can remain in close contact with their parents during a procedure, which not only can reduce fear, but also helps to ensure the stimulus needed for successful image acquisition. Moreover, to capture orthopaedic

Slovak’s private radiology institute

First came state-of-the-art equipment, then patients. Now, says Peter Boruta, patience is also needed, before perhaps the chance to carry out research becomes a reality.

my partner. We supplied our details – my partner is strong on money and I’m a little better on X-ray.’ We tried a contract with us; we proved we were not so bad, then the bank gave us better conditions then the rest of our equipment.’

In Czechoslovakia the Trnava Institute is the first to have a 64-slice CT scanner. It also has 22 trained personnel, eight of whom are radiologists – because the open MRI system is slower than high magnetic machines, so three physicians are needed for the magnet and the institute also runs two shifts, Dr Boruta explained. ‘We are up and running, but completely new in this region, so as yet we have few patients.’

After his first job (six years) focusing on cardio-radiology in a children’s hospital, Dr Boruta became the first radiologist to use Bratislava’s CT scanner. ‘I worked with that old axial scanner for a long time, so I’m certified to combine CT and cardiology.’

Asked how changes in eastern Europe impacted on his work, Dr Boruta reflected it has not been easy to change one political system for another. ‘After our border opened many radiologists went to Czech or western countries – most to England, where pay is ten times higher compared with the USA. I must pay my radiologists more than in the US. We work so hard that they can have better pay and they have more interest because I don’t just give them money, but also the chance to work with the most sophisticated equipment and to do complex diagnoses. So when an insurer has a problem about where to send a patient, we explain that, for angiography, MRI is better than conventional angiography. Also, I’m lucky because radiologists have to come to me for training, so I give the okay if they are excellent and work hard. So I ask whether they want hard work, with excellent equipment and better pay and most say yes. If they work in England they get more pay, but must spend more – and not everyone wants to be in England.’

However, foreign work and training has its benefits. Trnava personnel have trained in hospitals in other countries, among them one in Copenhagen, where they worked on Toshiba’s 64-slice. Also, years ago, Dr Boruta trained in Freiberg and Heidelberg. Continuing contact with those colleagues resulted in the formation of a German-Slovak Academic Radiology Association. ‘We established it during further training in Heidelberg, to exchange new information about our work, new teachings and modalities and what we are using in oncology – for example, the 64 slice scanner.’

In addition the association agreed that the Institute’s physicians and medical students can receive training in Heidelberg.

Research

When the first CT scanner was installed in the bio-medical research institute in Bratislava, because the institute was next to the hospital, close cooperation resulted and Dr Boruta participated in research. ‘In our CT department we particularly worked closely with neurosurgeons on stereotactic techniques. From 1981–86 the main problem was artifacts in the fixed ring. We worked with the

Paediatric radiology

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slovakian academic institute and had ideas about special stereotactic amperages from stockholm and Germany, but it was too expensive and our technicians didn’t have special stereotactic equipment. A Philips representative came to Bratislava and was immediately interested, so Philips began to cooperate with us. However, due to a cross-border communications problem, we had a conflict. Two years before the Eastern Block changed, the two mathematicians on the programme went to Freiberg to see Wilhelm Fisher, who was making stereotactic equipment, about collaboration. They worked in Freiberg for five years. They now work in our oncology institute, where they don’t use a gamma knife, but the accelerator with stereotactic equipment to treat arrhythmias and tumours. We did the research.

Dr Boštú’a desire to encourage and participate in more research is evident. ‘It is part of our philosophy that medical care also needs university research. We have the qualified personnel, equipment and a large number of patients. We can do research. But I must find funds.’ This presents a big stumbling block. Sponsors are easier to find in the West, he says, though he believes, for Eastern European countries, improvements are on the way.

He wants the institute’s research to not only focus on cardiovascular imaging, but also on lung imaging, using the 64-slice CT scanner as well as X-ray and MRI. The Slovak Academic Institute is also interested in MRI for lungs, and the combination also interests large groups from Western countries, he said. Other European countries, wanting to coordinate research to improve care in new European countries, might bring hope in terms of funds. Among meetings to that effect, one discussion has led to ‘quite a lot of money’ now going to eastern countries, he pointed out. However, he said, with regret, that the partners’ workload has been too heavy to submit any requests, and although EU representatives had visited, and a lot of paperwork had been submitted, funding did not result. ‘You read that in other countries they have a problem finding funds. It all takes time – five to ten years, maybe less,’ he reasoned.

Research in Eastern countries, he pointed out, is currently at a basic level, due to lack of funding. For now, he added, raising money to buy necessary equipment has been and must be the partners’ basic work. ‘We started with the CT scanner in July. Up to December I had a hell of a problem to get the money for the work I did.’ And lenders, he stressed, must be paid every month.

Could private patients present a good source of income? In Slovakia, less than one percent of patients are private, he replied, so the insurers pay for 99.9% of patients at his private radiology institute. But, he added, with some puzzlement, the institute has received one female cardiac patient, from Vienna. ‘In Austria, insurers don’t pay for CT examinations, which is a general problem in Europe,’ he explained. In conclusion, he said with a smile: ‘In Trnava I must sum up every day whether we have worked well. One bad case and you lose your credentials. So you take no chances, you give quality, and must be patient, because there are also good and bad doctors out there. I only provide a service. I’d be stupid if I told a doctor You are stupid. Why did you send me this patient? No, I will thank him for sending that patient to me.’
If you want to find a needle in a haystack, X-ray is a good tool. Now imagine how much easier that would be if the needle was glowing.

Thus, Dr Jean-Luc Vanderheyden underlined the potential of molecular imaging at an interview: ‘Meike Lerner, European Hospital. ‘If factors that cause cardiovascular diseases could be made to ‘glow’, he explained, ‘then anything that is to be detected before an event occurs. Currently we are working on the ability to detect patients who will be asymptomatic.’

Dr Vanderheyden explained. ‘There are a couple of cardiology programmes; one, for example, involves a tracer – a molecule – to image the adrenergic receptors to which norepinephrin binds. Making an imbalance in these receptors visible would enable us to detect the risk of a future heart failure. The clinical studies are very promising and we are confident that, in the near future, we will be able to identify those millions of people with a silent heart disease who might be at risk of a congestive heart failure.

On the other hand, we are working on improving imaging technologies, in particular the special contrast agents that correspond with tracers. At the VCT (very rapid CT) we can image the heart in five heartbeats and the brain in ten seconds with an extremely low dose of radiation (70% reduction compared with the normal dose). The combination of special contrast agents and advanced imaging makes it possible to look particularly at stenosis in a cardiac blood vessel, and therefore identify an at risk patient.’

Do some imaging technologies look more promising than others for molecular imaging in cardiology?

‘In my view we are not concentrating on any particular modality. It is more important to understand the disease, and then look for the imaging modality that will provide the best answers. In oncology, research is focusing on PET. GE also has a pilot project for prostate cancer with MRI. In cardiology, most of the work has been with SPECT and SPECT tracers, which show perfusion and the risk at risk of heart attacks. But these technologies also only show how many patients already identified due to an event or chest pain. Only if we are able to detect the tracer – a molecule – we can see anomalies in advance. To come to the point: talking about molecular imaging really means the combination of a tracer – a molecule, and sophisticated equipment that can detect the signal of the molecule. Of course, software solutions must be developed that allow greater ease of visualisation and help doctors in their diagnoses. Our objective is to use all possible modalities to identify and handle doctors in their diagnoses. Our objective is to use all possible modalities to identify and handle doctors in their diagnoses. Our objective is to use all possible modalities to identify and handle doctors in their diagnoses. Our objective is to use all possible modalities to identify and handle doctors in their diagnoses.

Such sophisticated technologies and advanced software always need ultrasound and PET to handle those technologies and make sound diagnoses.

‘Yes, education is vital. That’s why we observe all and everything during clinical trials, and then record this information connected with the procedure in a manual – for example, patient preparation.

‘It’s not just doctors who need to rethink, with molecular imaging patients will also play a greater role and have greater responsibility. Last, but not least, healthcare systems must shift from treatment to prevention and recognise that it will be more important to deal with patients when they do not have heart attack or congestive heart failure symptoms, rather than waiting for symptoms to arrive, then sending them to an emergency room to decide the best treatment. When we talk about molecular imaging in cardiology we are really talking about a paradigm shift from treating symptoms to preventing disease.

RADIOLGY RESEARCH: MOLECULAR IMAGING

Jean-Luc Vanderheyden. Inventor on 10 patents, author of over 50 publications.

In 1980, received a Pharmacy degree at the Université Libre de Bruxelles. Five years later he gained a doctorate in analytical chemistry for his work on cardiac imaging agents at the University of Massachusetts. Dr. Vanderheyden has been a Professor in Nuclear Medicine at the Massachusetts Medical School and, in 2004, a member of the reading/examination committee of FDG studies. He has also chaired sessions on ultrasound and have been involved in imaging at the Society of Nuclear Medicine’s annual meetings. He has also both reviewed and served as principal investigator for numerous National Institutes of Health grants. Dr. Vanderheyden is currently employed by Electric’s Healthcare division, where he leads the Global Molecular Imaging research team.

We are really talking about a paradigm shift from treating symptoms to preventing disease. Looking to the state of play today, I think we can expect a lot from this field. Already, sophisticated techniques have improved to a lot – two or three years ago we couldn’t see the things we see today. So, there is continuous progress and if we look further into the future we should be able to document metabolic changes that would be negative for ischaemia, including perhaps the effects of hibernation – and certainly we should be able to demonstrate that alteration of the sympathetic nerve function, or the adrenergic ones that result in coronary diseases.

And maybe – in about five years of using molecular imaging – we’ll be able to look at plaque characterisation, including the identification of the vulnerability of that plaque or additional receptor characterisation that can lead to drug therapy. And the last would be biomarkers, to perhaps identify some of the recorded disturbance instability that could be associated with aortal or ventricular arrhythmia.

So, quite a lot of things will be in the works that wouldn’t have been possible without the combination of the sophisticated technologies and suitable target agents.’

In recent years new imaging procedures have delivered many answers and solutions for oncological diagnosis and therapy. However, one question could not be answered: Is a tumour developing? The ability to detect dysplasia – the early stages of cell changes from which tumours develop – would answer this question, and present a huge advance in oncology, Now, thanks to researchers such as Professor Juergen Borlak and team, Germany’s Fraunhofer Institute for Experimental Medicine.

It will identify millions with ‘silent heart disease’

Jean-Luc Vanderheyden

It will identify millions with ‘silent heart disease’

Whether an organ is affected in its entire or only partially.

We are really talking about a paradigm shift from treating symptoms to preventing disease.

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In the current study, the major advances are already being precociously tackled. Because of PET diagnostics the result can highly be transferred into clinical practice, as the PET examination needs only very small quantities of each respective tracer to produce diagnostically usable images. This also means that there should be no problems with tolerance. We believe that, for clinical use for certain applications, this method should be really on the way.

Your dysplasia research centres on the liver – can this be transferred to other organs? The display of a dysplasia depends on

ONCOLOGY

IT WILL HELP US TO DETECT UNTREATED TUMOURS

Prof Borlak: The importance of early detection, particularly for hepatocellular carcinoma, can be seen in patients with PSC (primary sclerosing cholangitis) or cirrhosis of the liver. In these cases the liver shows chronic changes. Conventional methods such as CT, MRI or ultrasound can localise these changes, but these imaging procedures cannot confirm whether dysplasia is present. This has to be confirmed via biopsy, which is not always practical when a multiple of changes has been detected.

Even if there are no current dysplastic changes we know that with this disease pattern the probability of tumours developing and having to be removed – or even a liver transplant being necessary – is very high. If the point where the tumour developed is known, then surgical intervention can be carried out in time and liver resection should be sufficient. However, this has been the biggest dilemma so far – knowing that the formation of tumours is highly likely, but still not being able to intervene in time because the immediate preliminary diagnosis – dysplasia – cannot be detected with the imaging procedures that have been available so far.

Now, however, molecular imaging is giving us the opportunity to detect and examine these early changes with the help of specific tracers that show metabolic processes typical for dysplasia.

We are already testing this method in animal experiments, in which we examine the very first processes of dysplasia. We have a model that reflects the human disease pattern very well – the hepatocellular dysplasia development in great detail. We have found metabolic and cellular changes that can be directly linked to dysplastic tissue, and now aim to make these specific biomarkers visible with different tracers. This should enable us, for the first time, to capture dysplasia from an imaging perspective – and to determine whether regenerative proliferation. Based on this knowledge, we can then define if the decision tree and determine whether we need to intervene surgically, with medication or not at all.

A further important point is that we can not only look at dysplasia, but also localise it, which means we can see
Learning what can and might be done with MRI

Austria – In recent years scientists have produced multi-channel MRI systems, new coil concepts and new contrast media, all of which have helped to shift radiology towards the centre of patient care.

Covering such innovations and their uses, the International Magnetic Resonance Imaging (MRI) Symposium, founded by Professors Lissner, Doppman and Margulis, inevitably became an important entry in radiologists’ diaries. At the 12th symposium – held this year at Garmisch-Partenkirchen, Austria – Professor Maximilian Reiser said: ‘We will build bridges with other diagnostic procedures in the usual way, to evaluate their significance for developments in MRI.’

The congress highlighted the fact that, particularly in molecular imaging, there is a high synergetic significance for various procedures, e.g. positron emission tomography, optical imaging, along with new developments in MRI. These and their possibilities for clinical use were discussed.

The success of last year’s MRI symposium, with participants from 17 countries, and much positive feedback, led the organizers, Professor Hedvig Hricak and Professor Reiser, to mostly maintain that structure.

Garmisch-Partenkirchen, Austria –

Meet the experts

Due to high demand, the interactive small group discussions of interesting cases with renowned experts were extended. These focused on ear, nose and throat (ENT).

For the basic MRI course the professors said they had particularly aimed to present practical and understandable information. Also, at the end of the first day of teaching, they had introduced typical clinical cases, so that everything taught could be tested interactively with the course participants.

This event is certified by the German Academy for Advanced Training in Radiology and the Bavarian Medical Association. Due to the broad spectrum of topics covered attendance is almost enough to qualify for a year of training credits.

The 2009 MRI symposium will be held in Garmisch.

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To learn more come visit us at EuroPCR Booth E16 or visit www.gehealthcare.com/re-imagine.
Although cardiac catheterisation is considered the current gold standard for coronary artery disease (CAD) diagnosis, a new cost-effectiveness model indicates that, in many cases, a CT coronary angiography (CTCA) not only provides a better diagnostic outcome but is also cheaper. Melke Lerner discussed the implications of the study and his cost-effectiveness model with Dr Marc Dewey, of the Radiology Institute at Charité University of Medicine – Berlin.

CCTA offers better, cheaper diagnosis than cardiac catheterisation

Our model is based on clinical studies regarding the sensitivity and specificity of the different diagnostic methods: cardiac catheterisation, coronary angiography and calcium scoring, using CT as well as stress MRI with dobutamine,’ Dr Dewey explained. ‘This means, we did not use CT as well as stress MRI angiography and calcium scoring, catheterisation, coronary angiography and stress ultrasound segment in Europe.

In 2002, researcher Marc Dewey joined the Radiology Institute at Charité University of Medicine – Berlin. His doctorate was awarded in 2004 for his PhD and cardiology the following year this also won the British Society for Radiology. Dr Dewey’s research on cardiovascular imaging continues to lead the way in testing the effectiveness of medical care. His study is one of over 40 scientific publications he has authored.

Korean ultrasound firm wins leadership award

Medison, the Korean-based manufacturer of diagnostic ultrasound products founded in 1985 and pioneer of the first commercial real-time 3-D ultrasound scanner, recently received the 2007 Frost & Sullivan Competitive Strategy Leadership Award. The company’s range of ultrasound products includes everything from portable to digital 3-D and 4-D systems. The F&S award was given in recognition of Medison’s strategic initiatives to establish itself as a leading enterprise in the European ultrasound market.

Karthik Arun B, head analyst at F&S commented that Medison accomplished a high growth rate in Europe and is now in the top 3 of the world’s biggest and most advanced markets – by aggressively expanding its sales and market leadership in the Netherlands and Great Britain. As of the end 3-D ultrasound system.

At Cedars-Sinai Medical Centre, in Los Angeles, California Imaging Informatics Manager David Brown, said he monitors five PACS and storage archive servers, using the new software. ‘If I see a process is in trouble, or a directory is almost full, I can take action before any of our users are impacted. Most PACS administrators don’t have time to go into UNIX to conduct individual checks,’ he added. ‘Dashboard does, automatically. It also provides access to database information, including database table space that is not available anywhere else.’

At another test site for Kodak’s new software – St. Vincent Mercy Medical Centre in Toledo, Ohio – PACS Administrator Leslie Beidleman reported that it identified a glitch: ‘One of the dashboard indicators identified that some of our studies were not being backed up, and it highlighted areas of malfunction so they could be corrected.’

Further details: www.kodak.com/go/health.

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with low to intermediate pre-test probability.’

**Despite all the advantages, a CT examination means radiation exposure. Does your model indicate that MRI is a viable option?**

‘Obviously we don’t want to ignore the (albeit minor) risk associated with radiation exposure – but that risk is comparable to that of cardiac catheterisation. However, the situation is quite different as soon as you have double tests: CT and catheter. In terms of cost-effectiveness, the advantage of CT is its accuracy compared with stress echocardiography, stress ECG and MRI coronary angiography. CT sensitivity is above 90%, that of MRI coronary angiography is just above 70%. In our cost-effectiveness model we looked at stress MRI. This type of examination is more accurate – it has an over 80% sensitivity – but it is neither accurate nor cheap enough to be considered more cost-effective than a CT. Moreover, as the name says, stress MRI means exposing the patient during the CAD diagnosis to a certain degree of stress. However, MRI is very useful to analyse myocardial viability – a crucial aspect for the further management of patients with known CAD. For this purpose, MRI is more accurate than other methods, such as myocardial scintigraphy.’

**Would you make specific clinical recommendations based on the results of your model?**

‘To make certain clinical recommendations based on a cost-effectiveness model is rather difficult. Obviously our data are culled from studies on sensitivity and specificity, but we have not yet applied our models in practice, respectively in studies. As long as we do not have such real-life results, we cannot say whether our model is clinically useful. In real life, there are always a number of components that interact, such as workflow in hospitals, or between them and physicians’ offices. In our opinion we clearly need a study on how CT-based diagnosis will influence therapeutic management. This would provide a basis on which general recommendations might be formulated. However, our model does show that, from a cost-effectiveness point of view, CT is superior to other diagnostic procedures for patients with a pre-test probability of up to 60%. Another crucial question is: Who benefits from cost-effectiveness calculations? Our model looks at CAD diagnosis from the standpoint of society as a whole. To put it simply: We asked how much money can society save in terms of health insurance premiums and related expenses by optimising diagnostic management? The hospitals themselves look at CAD diagnosis from a very different angle: unfortunately, they make more money with invasive procedures because the DRG system offers higher reimbursement rates and thus higher profits for invasive procedures.

With regard to Germany, we also analysed how useful CTCA is from the perspective of office-based radiologists. For them the situation is quite different than for hospitals: current reimbursement rates for CT examinations do not cover their expenses and, even in the long run, they will not be able to reach a break even point. Consequently, office-based radiologists have little interest in implementing our model if it is not accompanied by an increase in reimbursement rates. However, according to our analysis, an increase of the net reimbursement for radiologists of about 75% means the radiologist can reach break even and CTCA still remains the most cost-effective method from society’s perspective. We hope this is a convincing argument to increase reimbursement rates. For this to happen, however, certain preconditions must be created. As long as this does not happen, our model will remain a theoretical approach. Nevertheless, we consider our cost-effectiveness analysis a suitable basis for further optimisation of both diagnostics and management of patients with suspected coronary artery disease.

**Cost effectiveness of coronary angiography and calcium scoring using CT and stress MRI for diagnosis of coronary artery disease.**

Recent reviews of serious adverse events with the use of low-osmolar iodinated (literature review) and gadolinium-based (manufacturer’s database) contrast media indicate frequencies of ≤4% and 0.01% of procedures respectively.

This review aims to discuss topical issues in contrast media usage with reference to serious adverse reactions and their prevention, particularly highlighting the risk of nephrogenic systemic fibrosis with the use of gadodiamide in patients with end-stage renal failure.

**Nephrogenic systemic fibrosis**

Gadopentate dimeglumine, the first paramagnetic contrast agent on the market, has an excellent safety record. Even the earliest post-market study, which included 15,000 (adult) patients and a group of 655 patients under aged 20, found no more than a 2.4% frequency of headache, nausea or other minor reactions, with only 1.7% minor adverse events in the paediatric arm. At present, eight gadolinium-containing contrast agents are licensed for use in the UK; five compounds carry FDA-approval. While these compounds are generally safe, there is a recognised morbidity associated with their use, anaphylactoid reactions do occur, and some are severe: A 1996 review of the use of gadolinium-based agents in 21,000 patients at a single academic institution revealed severe anaphylactoid reactions in 0.01% of cases, a finding since validated by other authors.

In January 2006, a previously unrecognised aetiological connection was suggested between the development of nephrogenic fibrosing dermopathy (nephrogenic systemic fibrosis – NSF), and the administration of gadodiamide during MRI scanning. This notion has received much attention since, starting with an FDA-warning in June 2006 and culminating in multiple editorials in radiological journals and advice from professional bodies in 2007 (European Pharmacovigilance Working Party, Austrian Chamber of Pharmacists, Am Coll Radiol). Irrespective of these warnings, many radiologists are unaware of the issue.

NSF is a scleroderma-like condition that may develop in patients with chronic renal failure, usually end-stage renal failure (ESRF) requiring replacement therapy. There have been a few instances of NSF in patients with apparently moderate renal impairment, based on glomerular filtration rate measurements, but at least some of these cases involved additional acute-on-chronic renal injury when GFR estimation may be inaccurate. The development of NSF, i.e. the induction of fibrosis might be related to the presence of extreme-ly toxic free gadolinium ions secondary to a process of transmetal-lation between the paramagnetic heavy metal bound to a chelating agent and endogenous ions, consistent with different stability between the various commercially available gadolinium-compounds. Delayed excretion of principally renally eliminated gadolinium contrast media in ESRF precipi-tates the problem, presumably by generating a critical tissue exposure. This hypothesis is supported by the observation that Gadolinium is detectable in biopsies of NSF-affected skin.

Nevertheless, two observations suggest that gadolinium compounds may be ‘a necessary but not a sufficient cause of NSF.'
1. Several cases of NSF had a documented earlier exposure to gadodiamide without consequent signs of the disease within the reported interval of 2–75 days.

2. NSF might also occur in patients without a documented exposure to gadodiamide compounds.

**Contrast-induced nephropathy (CIN)**

As with NSF, CIN occurs in the context of chronic renal impairment. Intravascular, particularly suprarenal administration of iodinated contrast media, cause a deterioration in renal function, as indicated by an absolute or proportional rise over baseline, the latter commonly considered when ≤25%. CIN is thought to occur through a reduction in renal perfusion via a direct effect of the contrast agent through a feedback mechanism dependent upon the osmolality of the medium, i.e. less hyperosmolar agents are less likely to induce the condition.

While the incidence of CIN is low in an unselected patient population, in patients with known renal impairment it was found to range between 12–27%. CIN is principally a self-limiting condition, but there is a high level of associated morbidity and mortality. For example in patients undergoing endovascular coronary interventions, the associated in-hospital mortality of CIN is cited as high as 22%. Today, CIN is the third-leading cause of hospital-acquired renal failure. However, since the condition is inversely related to the glomerular filtration rate, patients at risk might be identified in advance.

Appropriate questionnaires, asking for kidney disease history, prior renal surgery, proteinuria, hypertension, gout and, importantly, diabetes, detect 99% of individuals with a raised serum creatinine. Such patient-related risk factors are compounded by procedural risks: the patient’s state of hydration, type, concentration and volume of contrast medium used, as well as current use of nephrotoxic drugs, and history of very recent contrast medium administration are all critical.

Appropriate hydration even after the radiological procedure and up to 24 hours is the single most important measure that can be taken to avoid CIN. A urine output in excess of 150 ml/h is advised and, in the case of high dose or intra-arterial contrast media administration, hydration should be achieved intravenously. The use of low-volume or preferably iso-osmolar contrast media is not effective. In the search for a protective pharmacological agent, no single drug has consistently been found to be of use. Specifically, there is insufficient evidence for a protective effect of N-acetylcysteine.

Haemodialysis removes iodinated contrast media but does not prevent CIN and several sessions may be needed. It may take weeks to completely eliminate the agent by peritoneal dialysis. However, while considering its invasive nature, cumbersome set-up and high costs, continuous haemofiltration is effective in preventing CIN.

One should be aware that any deterioration in renal function might not become evident clinically, or through laboratory chemistry, until a week after the intervention. Measuring check serum creatinine at 24 hours will certainly miss a relevant proportion of instances.

Advice regarding the prevention of CIN and its management has previously been provided by the European Society of Urogenital Radiology in their 1999 guidelines, recently reviewed by Thomsen (Nephrol Dial Transplant 2005; 20 [Suppl 1]: i88–i22).

**Lactic acidosis**

The oral anti-diabetic agent metformin may inhibit lactate degradation. The story of metformin (a biguanide) induced lactic acidosis is intimately linked to the occurrence of contrast-induced nephropathy. A metabolic acidosis due to raised serum lactic acid may occur in severe hypertensive states, such as cardiogenic shock, or sepsis. In the late 1970s, a causal relation between intake of biguanides, acute renal failure and lactic acidosis was recognised as a class-effect. However, metformin does not cause renal failure, metformin and radiographic contrast agents do not interact, and lactic acidosis rarely occurs in patients with normal serum creatinine. Nevertheless, since metformin is eliminated from the body entirely via the kidneys, any renal impairment, e.g. in contrast induced nephropathy, may lead to its accumulation.

Lactic acidosis in the context of CIN in patients with metformin-treated diabetes has an incidence of only 0.003%; importantly however, about half of cases have a fatal outcome. Patients at risk are those at risk of CIN, particularly those whose renal impairment is due to a diabetic state. As indicated, there is a correlation between the degree of renal impairment and the likeliness of CIN, as well as the state of hydration at the time of a contrast medium supported investigation. Irrespective, since a normal serum creatinine does not necessarily imply normal renal function, occurrence of lactic acidosis may still ensue in such patients.

Advice differs in various parts of the world as to how contrast media administration should be managed in diabetics receiving metformin. Some believe that biguanides are contraindicated in any form of renal impairment and it may be argued that metformin is an inappropriate choice of agent in the continuing on page 14
specifically regarding the use of metformin should only be recom-
mened when serum creatinine in excess of 100 ml of contrast
material is required 48 hours prior to a procedure while in the United
States metformin may be stopped up to 48 hours in advance of a
procedure. The incidence of severe reactions was reduced from 9.0 to 6.4%.

This study used ionic agents in comparison with placebo and administered 32 mg of Methyl-
pradoline at least 6 hours and again two hours prior to a con-
trast procedure. The incidence of severe reactions was reduced to 0.75 to 0.2%. The single study that satisfied all inclusion criteria
of the above review was published in 1994 by the same author, now
reporting on reactions to non-ionic iodinated media, but using the
same prophylactic regime and finding incidences reduced from 5–2% overall and 0.87 to 0.17% for serious events. However, the
latter was not statistically signifi-
cant.

Interestingly, the incidences of serious events were surprisingly
similar for both ionic and non-
ionic media. Studies administering corticosteroids immediately or up to
two hours before a radiograph-
ic contrast medium found no sta-
tistically significant effects – hard-
lly surprising given that cortico-
steroids work by interfering with protein synthesis in the cell nucle-
us. Consequently, their maximum effect is not seen until after 2–8
hours.

To prevent allergic reactions, patients at high risk need to be
identified and non-ionic agents be used in their care. Current practi-
cal advice has been given by Bush (2006): Previous reactions to con-
trast agents and a history of asth-
ma or allergy are all predisposi-
tions, or make a subsequent reac-
tion more likely. Prior anaphylac-
toid reactions are of particular
concern, and one should aim to
ascertain their type and severity.
Bush asserts that ‘pre-testing is
not predictive, may itself be dan-
gerous, and is not recommended’. Patients with previous mild reac-
tions that needed no intervention
may be given the choice of a pro-
phylactic regime. Individuals who
exhibited a rash, bronchospasm or laryngeal oedema should all receive prophylaxis. In cases of
prior severe reaction, it must be
seriously considered whether a
radiographic contrast study is
required. If found absolutely
necessary, prophylaxis must be given
and support from an anaesthetist
should be arranged for the time of
the procedure, including the im-
mediate post-procedure period
since reactions may be delayed up to
30 min. It should also be recog-
nised that essentially the same advice applies to the use of
gadolinium compounds in MRI.

As indicated above, severe anapa-
phylactoid reactions to gadolin-
ium-based agents are rare and
potential risk factors include a pre-
vious reaction to iodinated con-
trast medium.

Conclusion – Agents used to mod-
lise tissue contrast in imaging
investigations may have pharma-
cological effects or provoke ana-
phylactoid reactions. The inci-
dence of such events is generally
low but some are severe and few
occasionally fatal. Radiologists
must therefore be aware of current
advice on the recognition and pre-
vention of these states. Current
thinking focuses on NSF as a pos-
sible late serious adverse reaction to gadodiamide, however, it is
unclear at present whether this
represents a class rather than a
specific agent effect. Principally,
all serious adverse drug reactions
should be reported through appro-
priate channels, for NSF a web-
based registry has been established
at Yale University. What unites
instances of NSF, CIN and met-
formin-induced lactic acidosis is
the impaired renal function of
patients in whom these conditions
occur. All patients receiving con-
trast agents should therefore be
asked about a history of kidney
disease, particularly diabetics.
Special considerations apply in
any emergency setting when some
of the above advice may be
waived.

*A referenced version of this article is available upon request by contact-
ing the author at jlauss@monash.edu.

Blood products and radiofrequency
identification (RFID)

Bar coding saves blood products

The Sato Corporation specialises in barcode printing – established in Japan, it
pioneered the first hand labelers in 1962 and, in 1974, developed a printer
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The firm points out that when a blood product is needed for transfusion, a
nurse takes it from the refrigerator and must check it is the correct type. Then
the receiving patient’s identity must be checked. Before and after a
transfusion the blood product’s

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Gadofosveset trisodium (trade name: Vasovist) is the first approved blood pool contrast agent worldwide for the diagnosis of vascular disease, Bayer Schering Pharma AG reports. This innovative agent for use in magnetic resonance angiography (MRA) is unique among MR contrast media due to its capacity to prolong the diagnostic window for up to one hour. This characteristic is attributable to its ability to bind reversibly to serum albumin. Thus, gadofosveset has a much higher stability and longer residence time in the blood than conventional extra-cellular agents. It is therefore not only suitable for conventional first-pass imaging in the arterial phase, but also provides brilliant ultra-high resolution MR images of blood vessels in the steady-state phase.

In 2005, this product was approved for use in abdominal and peripheral MRA in the EU, Canada and Australia, and, in 2006, for whole body MRA in Switzerland.

From the Department of Radiology at the University of Bonn, Germany, Dr Winfried Willinek has reported obtaining MRA images with very detailed information of vascular structures, particularly in the periphery, when using this contrast agent. "Significantly more vessel segments are depicted on ultra-high resolution steady-state images with gadofosveset, compared with the standard technique alone. This helps to guide interventions and may improve patient management especially in the critical patient in whom we need to identify more distal vessels that are potentially suitable for distal origin bypass surgery." The manufacturer adds that the contrast agent - which can be used for both dynamic and static imaging - might also open up new opportunities in MRA. "The blood pool agent provides homogeneous contrast in both arteries and venous structures." According to Dr Joachim Lotz, a radiologist at Hanover University Clinic, venous imaging is reliable, easy to use and of a consistently high quality. The reliability of the venous contrast produced is also the single most important aspect for diagnosis and for planning surgical or interventional procedures, especially in cases with highly pathologic venous alterations. Gadofosveset may, moreover, expand the potential of MRA in the detection of pulmonary embolism (PE) following deep venous thrombosis (DVT), a common and potentially life-threatening disease. At Grosshadern University Clinic, Munich, Dr Christian Fink explained: "Following a single bolus injection the lungs can be dynamically imaged during first pass to assess perfusion of the lung. High spatial resolution pulmonary MR angiography during the steady-state also allows the detection of the embolus in the lung." Finally, Bayer Schering points out, the diagnostic workup can be completed with MR venography of the whole body. The source of an embolus arising from an underlying deep vein thrombosis can be confirmed or excluded within one and the same examination. Radiologist Professor Marco Essig, at the German Cancer Research Centre (DKFZ), Heidelberg, added: "I see a great potential in the use of gadofosveset for MRA of supra-aortic and cerebral vessels."

Steady-state imaging with gadofosveset displays relatively large anatomical areas with an excellent spatial resolution in the sub-millimetre range, whereas cerebral MRA with conventional extra-cellular agents can only be performed in about 30 seconds during first pass and with a substantially lower spatial resolution, the manufacturer points out. "Moreover, gadofosveset-enhanced MRA is much less invasive than conventional angiography or computed tomography angiography (CTA)."

According to Professor Regina Beets-Tan of Maastricht University Hospital, Netherlands, the contrast agent might also prove useful in distinguishing malignant from benign lymph nodes in colorectal cancer, which no other contrast agent has been able to do yet.
**Clinical Relevance**

It is important to note that osmotic effects have a major place in the maintenance of equilibrium in the human body with respect to various factors of importance, and to the chemical composition of the fluids and tissues, examples; temperature, heart rate, blood pressure, water content or blood sugar levels. In addition, drinking water it may require 30–60 minutes to achieve reasonably good equilibrium throughout the body. Osmolality determines the physiologic acceptability of a variety of solutions and has a great impact on osmotic and nutritional purposes.

**Osmolality**

Osmolality can be used for routine analysis and on patient samples requiring fast measurements. If screening for toxins ingestion is done, star osmolality should be included as a rapid screen for low molecular weight toxins. It is a useful tool in the diagnosis of neurosurgical patients often specifically for osmometers.

**Basic quality control practices**

CLIA ‘88 – Clinical Laboratory Improvement Amendments of 1988 are requirements for general quality control (QC) provisions and personnel qualifications for moderate complexity testing. JCAHO – JCAHO follows CLIA ‘88 moderately complex methods that external controls (usually liquid) be run to verify manufacturer’s claims and to validate that no change occurred with the testing system. Labs must be certain that these results meet its acceptance criteria before patient reports are results. CAP – Controls must be included in all tests, even those identified in CLIA ‘88 as waived. Cap requires an audit trail that ties patient results to both a positive and negative control each day of use.

**Advanced Instruments**

These reliable, quality products help clinical labs to achieve the most accurate results with the only comprehensive set of control solutions and materials designed to routinely test patients with acute chest pain for troponin in their emergency wards.

**Low compliance with guidance harms patients**

One informative case study – only published in 2006 and therefore not included in the Lewin report – discusses the laboratory marker NT-proBNP for the diagnosis of chronic heart failure. The Siebert et al. study (Cost-effectiveness of using N-terminal pro-B-type natriuretic peptide to guide diagnostic assessment and management of dyspeptic patients in the emergency department; Am J Cardiol 2006; 98: 800-805), describes 599 patients who had dyspepsia and followed up over a period of 60 days. Standard compliance was that the costs of hospital treatment would be reimbursable if the doctors knew their patients’ NT-proBNP value. This decline in costs would have a huge impact on the period of hospitalisation, but also to a 58% reduction in the use of Abdominal radiography.

**Contact:**

Hennning van Eicke

Roche Diagnostics GmbH

**Clinitrol Activation**

The key to all successful therapy is a correct and timely diagnosis; yet the value of laboratory diagnostics is often underestimated. At least that’s the conclusion reached by an extensive analysis undertaken in the study by the Lewin Group (The Value of Diagnostics Innovation, Adoption and Utilization; The Value of Diagnostics Innovation, Adoption and Utilization; Car, June 2005). Although many recom-
**FAST TRACK surgery**

The term fast track surgery refers to a combination of findings from current, high quality studies of anaesthetics, surgery and perioperative care for a certain medical indication,” explained Professor Schwenk. “The evaluation of these findings is then transformed into a certain path of treatment followed through all the treatment stages, i.e. from admission to a hospital, all the way to outpatient aftercare. In short, fast track surgery is a procedure specific, evidence based and inter-professionally optimised course of therapy.

Although there is already an established procedure for a certain indication, the initial reason why such a treatment path should be developed can be explained using colon surgery as an example. With traditional treatment, postoperative general complications such as pneumonia or cardiovascular complications, tend to occur in every third or forth case. Obviously the question arises as to how these postoperative problems can be minimised. This is the basic question that must be dealt with by all the medical disciplines involved - in this case surgery, anaesthetics, nursing care and physiotherapy. Having looked at medical findings from all over the world, they research and define what can be classified as evidence based and what can then be implemented in hospital. Results are then summarised in a catalogue. In the case of colon surgery, the treatment path is as follows: A patient can drink up to two hours prior to surgery, no colon preparation, regional abdominal anaesthesia via thoracic parietal catheter, additionally general anaesthetic, minimally invasive surgery or transverse opening of the abdominal wall. The patient is aggressively mobilised out of bed by the evening of the day of surgery. There is no infusion or drainage and the patient can eat normally the next day. On the second day after surgery the patient is fully mobilised, and from the fifth day onwards the patient can be discharged.

With this treatment plan we have been able to lower the rate of complications in colon surgery to only 10% and have cut the length of individual hospital stays by half. The treatment plan has resulted in standardisation of processes, even though there are still individual aspects for each patient, it is easier to calculate treatment costs. Deviations from the “normal course” are significantly lower than those occurring with traditional methods, which is important for planning integrated care with doctors in surgeries outside a hospital. Moreover, the treatment path ensures a streaming of procedures and prevents, for example, redundant examinations. Finally, the lower rate of postoperative complications results in lower follow-up costs.

‘Of course fast track methods require investments, such as intensive staff training, so that the methods can be successfully implemented in practice. Often the structures required for successful implementation must be created, such as the setting up of acute pain services. All in all, these investments pay off in the medium term, particularly for patients.’

So why is ‘fast track’ still infrequently used? ‘The exact number of surgeons fast-tracking patients in Germany is unknown. Only 24 hospitals in Germany are undergoing a joint internal quality assurance programme offered by the Charité. On a European level a working group represents the fast track process, which is known as Enhanced Recovery After Surgery (ERAS), and hospitals in Denmark, Sweden, Spain, Norway and the Netherlands are participating in that programme. ‘We mustn’t forget that there are probably some hospitals already using this method without being aware of it and without having a specific term for it. I believe fast track surgery will gain more importance in the future and that it will also be implemented for other medical indications. But, whoever opts for fast track needs to be aware that the method has to be continuously advanced. Once developed, any treatment path must be checked regularly to include any relevant new findings. Fast track surgery is a continuous process that adapts to new medical findings.’

**Changing operations and work patterns**

Under the banner Surgery and Changing Systems, the 124th Congress of the German Society for Surgery (1-5 May, IC Munich) promises to be a stimulating programme. According to its President and Secretary General, respectively Professor H U Steinau (left) and Professor H Bauer, the focus will not only be on current operating procedures, interdisciplinary problem cases, and troubles with surgical provision under changing economic conditions, but the current situation for junior surgeons and future prospects for surgeons in Germany will come under scrutiny.

Along with advanced training courses, a training laboratory, video presentations, careers advice, satellite symposiums, conferences, and the presentation of clinical data, the forum will present a platform for young scientists. The new forum will also define the ethical basics of experimental and clinical research.

On 2 May, the congress will merge with the Congress on Accident and Emergency Medicine, organised by regional branches of the Professional Medical Associations in Saxony and Bavaria, to present and discuss clinical data, the forum will present a platform for young scientists. The new forum will also define the ethical basics of experimental and clinical research. Nt: For those who could not attend the congress the contents of the clinical and experimental sessions will be presented on the Society’s website (www.dgch.de), and in publications from the DGCH and the BOC.

Although everyone talks of ‘fast track surgery’, in most cases the term is not correctly used. The name might appear to be a reference to speed but, in this case, ‘fast track’ refers to therapy optimisation. The fact that patients recover ‘faster’ due to optimised therapy is really just a very positive ‘side effect’. Meike Lerner, of European Hospital, discussed the method with Professor Wolfgang Schwenk (below), Associate Clinical Director at the Clinic for General, Visceral, Vascular and Thoracic Surgery, at the Charité University of Medicine Berlin, and one of the pioneers of fast track surgery.

**Win a weekend in Munich and test the new BMW X5**

Test the iLED operation light with digital video system in SDI quality at TRUMPF, Stand 100 in the foyer!
New device leads airway management evolution

i-gel, a new single-use, supraglottic airway device designed for quick, easy insertion, also comes ready to use. Intersurgical, its UK-based manufacturer, reports that the device ‘…accurately positions itself over the laryngeal framework to provide a reliable perilyngeal seal without the need for an inflatable cuff’. For greater safety, it also incorporates a gastric channel; an integral bite block to reduce the possibility of airway occlusion, and a buccal cavity stabilizer to aid rapid insertion and eliminate the potential for rotation.

‘The i-gel is a truly unique airway device. It represents the culmination of years of extensive research and development,’ says Intersurgical, which is inviting EH readers to see the device at Stand 20 in Euroanaesthesia 2007, 9-12 June, in Munich, Germany.

Details: www.i-gel.com

Bespoke operating theatres

‘Supersuite’ describes a valuable service provided by Berchtold, specialist manufacturer of operating theatre lights (e.g. Chromosphere), camera systems, monitor arms, surgical tables (Operon) and equipment management systems (surgical and anaesthesia booms, but not the device control units). For the company not only sells and installs its individual products, such as the simple anaesthetic pendant soon to be installed at the Siemens Radiography suite in Kent and Canterbury Hospital, but also runs the Supersuite service to undertake the planning, design and installation of integrated, customised operating theatres – notably the 10 in use at Krefeld Hospital, Germany, and 12 at Baylor Regional Medical Centre in Plano, Texas.

Supersuite can produce an up and running operating theatre in 6-15 weeks, depending on size and other factors. ‘Generally speaking, Berchtold supports the structure of the operating theatre,’ explained Judith Zsarmach, Marketing & Communications Manager at Berchtold. ‘We design where our lights, tables, booms, etc. would best be located. We don’t manufacture device control units, but we manufacture the system where the device control units can be placed, so we team up with partners for integrated services, including imaging and device control and visualisation, such as from Storz, S&N, etc.’

Additionally, should a hospital want other, perhaps specialist equipment, Berchtold also sources and supplies it.

Supersuite specialities include orthopaedic surgery, advanced laparoscopic surgery, general and neuro surgery and cardiac surgery.

Further details: www.berchtold.de

Pioneering vertebral procedure

Czech Republic - In 2001, when doctors at the Motol Faculty Hospital first saw Dusan Matras, he was diagnosed with a thyroid gland problem. However, they later found he had a tumour. Six years later, Dusan has become the first in the world to undergo a unique surgical procedure on the vertebral column in the neck area.

Dr Jan Stulik, who heads vertebral surgery at Motol, explained that the patient originally had thyroid gland neoplasms, and this had been removed. However, five years later a vertebral metastasis was found in the second cervical vertebra. After lengthy discussions, then planning, the Motol team decided to remove the entire C2 vertebra (a risky procedure). All previous efforts to do this have resulted in partial brain damage because C2 protects two large brain vessels, one of which had to be sealed off.

By Rostislav Kuklik

The Prague surgeons became the first to successfully complete such an operation without destroying any artieae vertebrales or damaging the patient’s brain. The team first worked from the back of patient’s neck, removing the axis posterior vertebrae. Three weeks later they removed the remaining C2, by centrally splitting the lower jaw (mandibula). They fixed C1 (atlas) and C3 together using a metal fitting enclosed in bone implants taken from the patient’s pelvis. At the same time, to support the nerves and large vessels, they replaced the missing C2 frontal area with a titanium inlay.

Thus, the surgeons removed the whole vertebra without harming the vital structures running through the spinal canal and secured almost the full physiological movement range of patient’s head - 11 hours after surgery.

‘I have just slight difficulties turning my head to the furthest left and right positions, but otherwise everything is absolutely perfect,’ 27-year-old Dusan told the waiting press.


See saw blades on the Web

Komet Medical has developed rotating and oscillating instruments since 1921. In its ‘evolution’ range the various sized, hardened, stainless steel saw blades are compatible with common drive systems, and suit both knee and hip endoprosthesis - 90mm length for knee, 50mm-70mm for hip. A varying material thickness makes vibration in the saw blade template impossible, Komet points out.

To provide the obligatory evidence these reprocessable blades are in fact clean after cleansing and disinfection, with an independent company Komet developed a validated reprocessing method. These individual reprocessing steps can be viewed at: www.kometmedical.de.
Electron intra-operative therapy

Developed by Professor Umberto Veronesi, breast cancer specialist and former Minister of Health in Italy, in certain cases electron intra-operative therapy (ELIOT) could become a substitute for postoperative radiotherapy. As the new method undergoes clinical tests at the Breast Centre, Milan, Meike Lerner of European Hospital spoke with radio- oncologist Professor F-J Prott about current results and ELIOT’s potential future in oncology.

‘ELIOT means that single-fraction radiation of 21 Gy is delivered directly to the tumour bed during a surgical intervention, to a depth of about 3 cm,’ Professor Prott explained. ‘Due to this procedure the procedure takes about 30 minutes longer than usual, but post-operative radiation therapy is no longer needed. Consequently, for most patients, the treatment is complete, with hospital discharge, and they don’t have to undergo outpatient radiation therapy, which could take up to six weeks.’

‘Since post-operative radiation of the entire breast and the surrounding tissue is no longer indicated, ELIOT is suitable only for a clearly defined group of patients. These parameters must be present: the patient is older than 50 years; the tumour is not larger than 2 cm (T1) and no lymph nodes are affected (N0). The histological degree is maximum G2 and there must be no indications of metastases. The surgeon has to be extremely careful to remove any traces of tumour-carrying tissue.’

‘Due to today’s advanced diagnostic methods, the number of early detections and thus of T1/N0 tumours is increasing constantly. However, many women with such early-detected tumours are under 50 years old, so are not eligible for this kind of intra-operative radiotherapy.’

‘Despite these limitations, the first clinical results are very promising. A study at the Milan Breast Centre, involving 1,600 patients, showed that only 2.8% of the women suffered fibres and the recurrence rate was 1.6%. That means, compared with conventional methods, ELIOT showed 1-2% less fibres and even 2% less recurrences. However, these figures are only valid for Milan. It remains to be seen whether other hospitals will be able to achieve similar results.

After their debut at the 2005 Medica trade show, the first LED lamp made by Trumpf Medizin Systeme (ILED) found new users worldwide. In the USA, the light also received two prizes at the Healthcare Facilities Symposium & Expo, which recognises extraordinary innovations in the health industry. However, it was even more important for their inventors to scientifically prove the quality of the ILED. Trumpf decided to commission two studies, to ascertain the degree that adjustable colour temperature influences our visual performance and also whether its ILED sufficiently meets hygiene standards for the operating theatre (OT).

**Colours for more vision**

Currently, the ILED is the only operating light that can have its colour temperature adjusted to any OT situation – from warm red 3,500 Kelvin to cool blue at 5,000 Kelvin. An independent lighting institute conducted a study in which 30 test subjects had to identify standardised vision test characters on a colour background under both the ILED 5 and gas-discharge lamps. Results: Under the ILED, the characters were considerably clearer with weaker colour contrasts. In most cases, the test subjects had the best vision at 4,000 to 4,500 Kelvin and, with a blue background, at 3,500 Kelvin. In addition, they preferred the ILED even when the colour temperatures of both lamps were the same (4,000 Kelvin) – because the ILED’s light was more evenly distributed. For surgeons, this means that the ILED helps them to better distinguish between healthy tissue and diseased tissue that is slightly off colour. For a red wound location the surgeon’s eyes are relieved by a high colour temperature, for a blue wound location, a low colour temperature.

**Best ratings for hygiene**

Professor Seip, at Germany’s Centre for Hygiene and Technical Public Health, tested how well the ILED met the hygiene regulations in the OT under real-life conditions and in strict compliance with EU directives. His findings: The ILED is one of the best lamps that is compatible with an air-handling ceiling that he has ever tested – because it generates very little turbulence that would disturb the irrotational, laminar flows in the OT and thereby impair the room’s cleanliness. This means that the light is also well suited for sensitive medical disciplines, such as orthopaedics and bone surgery, in which absolute sterility is top priority. The ILED’s excellent ratings come from an open, compact form, low laminar flow surface and minimal temperatures on the lamp body.

**Studies confirm adjustable colour temperatures benefit surgeons**

Currently, ELIOT is only used for research. In view of its apparent advantages, when might it be clinically introduced? ‘It’s without a doubt a very interesting method and there is a clear trend towards ever more targeted and precise radiation therapies, moving away from large area radiation. However, we must acknowledge that the conventional method – breast-conserving surgery followed by about 30 radiation sessions – is also very successful. Moreover, we were able to reduce side effects, particularly skin changes on the breast, so we have a method that’s tried and true and which has been constantly improved. As far as the current status of ELIOT is concerned, I’d rather go for “never touch a running system”’. Having said that, I also want to point out again that ELIOT means there is only intra-operative radiation. As a boost, I mean an addition to whole-breast radiation therapies, intra-operative methods are allowed and may be applied outside studies. That means, during surgery a boost of about 10 Gy is applied and a conventional breast radiation therapy of about 46-50 Gy follows. This procedure reduces the post-operative radiation by one week, that’s five sessions.

In short, I look very optimistically upon ELIOT and I think it’s an important goal to make breast cancer therapy as stress free as possible. Nevertheless, we must not act prematurely, that means long-term and large-scale studies are needed before the method is introduced in to everyday practice. In my opinion that will take another five years of intensive research before we might be able to use ELIOT without reservation in every day oncological work.”
Ultrasound-guided regional anaesthesia and pain therapy – a painstaking technique

Watching an ultrasound-guided needle move towards a nerve can help an anaesthesiologist and a pain therapist, as well as increase their success rate. Nonetheless, few physicians use this option in interventional pain therapy. Meike Lemer of European Hospital spoke with Dr Urs Eichenberger, hospital consultant and director (ad interim) of pain therapy at the anaesthesiology polyclinic, University Hospital Bern/Inselklinik, and asked why this technique is so rarely used in interventional pain therapy and what the future holds for this technique.

“Ultrasound-guided intervention” pain therapy originates in ultrasound-guided regional anaesthesia,” Dr Eichenberger explained. “The traditional method for partial anaesthesia – that is, injecting anaesthetic – has a drawback. It shows only if the needle tip is close to the nerve. But what really want is to transport the drug to the nerve, not the needle. With ultrasound we can visualise and localise nerves and guide the needle all the way to them, thus reducing the risk of damaging the nerve and surrounding structures. Obviously, as an anaesthesiologist you know where the nerves should be, but there are anatomical variations that can only be recognised with ultrasound. Moreover, you can watch the anesthetic spread live, so to speak, and see whether it reaches the target. With the traditional method the success rate of very experienced physicians is up to 95%. With ultrasound I’m sure we can increase that rate.

The method was transposed to pain therapy from regional anaesthesia, and the advantages are obvious: With chronic pain patients we usually diagnostically block nerves to localise the source of the pain. Before, we did this blindly – we injected large doses of anaesthetic, up to 10 ml. With the help of ultrasound we can reduce that dose to about 1-2 ml because we can target certain nerves and don’t have to spread anaesthetic over a large area. For a patient this hopefully means better diagnosis. Furthermore, dose reduction in regional anaesthesia – where larger doses are used – means a lower risk of side effects and allows us to block several regions of interest at the same time, both arms, for example. With a dose of 40 ml per side we couldn’t do this – as that dose would be toxic.

Ultrasound-guided pain therapy is particularly interesting for very sensitive regions, such as the cervix. Very close to the targeted nerves you find a lot of different vulnerable structures. Today ultrasound can visualise small nerves down to a diameter of 1-2 mm. One example is the possible visualisation of the nerves innervating the cervical facia joints. Consequently, we can position the needle right next to the targeted nerve. The traditional method to block these nerves is based on X-ray images, which show only the neighbouring bone structure. While this gives an indication of the nerve pattern you do not recognise anatomical variations, both of the nerves and of surrounding structures you don’t want to damage.

Why is this apparently successful method so rarely used?

In regional anaesthesia the method is used quite often, and in a lot of hospitals in pain therapy the targeted nerves are smaller and therefore more difficult to detect by ultrasound. In ultrasound you recognise the very small nerves only if you have excellent anatomical knowledge and know where these nerves run. You need an experienced eye to correctly interpret the images. And we should not forget: With the exception of cardiac anaesthesiologists, the anaesthesiologists and pain therapists using this method often lack experience in reading ultrasound images. This is an entirely new field for the discipline.

There is also another problem in pain therapy. There are so many anatomical regions we have to deal with. In pain therapy we have too many patients for special regional anaesthesia, so it’s more difficult to build up experience. In some ways, ultrasound-guided work is a paradox: it facilitates the therapy, but only if you already have the necessary knowledge. So, as a physician, you have to master your trade perfectly. Ultrasound will not automatically turn a physician into an excellent pain therapist – you have to be an excellent physician to begin with. Handling the technology is something that has to be learnt and examined in workshops and seminars. In anaesthesia particularly, there’s currently a huge demand for training, and a trend towards ultrasound-guided methods, which will increase over the next few years.

The next step is obviously to spread the method. We are currently one of only a few centres to offer this pain therapy in anaesthesia. The situation is somewhat different. Here the method is better known, and I expect, in the future, it will be a normal procedure in all regional anaesthesia applications for which it is suitable. The rate of success could be augmented and complications could be reduced significantly. Further details: urs.eichenberger@insel.ch

FDA clears sale of patient-controlled ventilator

Neurally adjusted ventilatory system promotes spontaneous breathing

The US Food and Drug Administration (FDA) has given 510(K) clearance to Maquet Critical Care of Solna, Sweden, to market its Servo-i ventilator with the NAVA (Neurally Adjusted Ventilatory Assistance) option. Sales of the system, which aims to treat and monitor neonatal, infant and adult patients, should begin this year. In addition, current Servo-i users can upgrade their system with NAVA.

In this new approach to mechanical ventilation, to improve synchrony between patient and ventilator the patient’s own respiratory centre can control the ventilator. Signals from the brain’s respiratory control centre are transmitted through the phrenic nerve to the diaphragm, where a catheter captures the electrical activity (Edi) and feeds it to the ventilator. The ventilator responds by providing the requested level of support to the patient. As the ventilator and diaphragm work with the same signal, the coupling between the two is virtually instantaneous. In addition to being a distinct mode of ventilation, NAVA also enables a complete evaluation of the neural respiratory control by capturing the electrical activity of the diaphragm (Edi). The Edi signal can be used as a unique monitoring tool, as it provides information concerning respiratory frequency and volume requirements, the effects of ventilatory settings, and to gain indication for sedation and weaning.

Christine Ström, Director Ventilator Program, Maquet Critical Care, said: ‘We are proud to introduce the most progressive advancement within respiratory therapy since the introduction of mechanical ventilation 30 years ago.’

Details: www.maquet.com
...EUROPEAN HOSPITAL

...US firm localises IT systems for European countries

Founded in 2001, Milan Healthcare, promoted by the Italian association upgrades web-based medical and laboratory programme

Italian association upgrades web-based medical and laboratory programme

Merge Healthcare

US firm localises IT systems for European countries

Beth Frost-Johnson

by the French Ministry of Health, is considered one of the early gurus of digital medicine in Europe. 'Wow. You know how it started, and what kind of work we're doing?' I work!' Zaghrout's answer was: How do you want to work? I think we have a story to tell, but what drives people to adopt it? Our solutions are easily configured for regulations, finance and are the model of a specific country.' PACS Solutions 'The way we developed our PACS is very interesting,' says Beth Frost-Johnson. 'We used a process called concept engineering. We went out and spent two days individually with multiple radiologists from imaging centres, large hospitals, small hospitals, multisites and single sites. One day we just observed how they worked; the second day we asked conceptual and technical evolution questions such as: What don't you like in the way you work? not just the software, but what drives you crazy? The second question was: How do you want to work? We transcribed all that information, and then had a, what they called, information review it, using highlighters, and sticky notes. They filled an entire room with the customer's voice. We found that users can't always articulate the specifications, but if we can understand what is difficult and what challenges them, then we can translate that into a product specification. Our PACS was built on what our customers told us. Oftentimes when a radiologist sees our PACS, they say: Wow. You know how I work!' This coming from both the firm's development process and experience, she adds, with the ability to change our forthcoming workflow applications accordingly.' Clinical Applications 'Our Merge Mammom is, which is a vendor neutral, multi-modality mammography workstation that allows our users to read studies acquired by any brand of digital mammography modality, and from any type of modality. 'Italbioforma is starting out with digital mammography and they decided later that they want to do a whole range of imaging centres and their US-...
ICT IMPROVES PATIENT SAFETY

By Dr Veli Stroetmann, of empirica, Germany, a research and consulting firm that focuses on businesses and healthcare IT developments

Improving patient safety and quality of care is of key importance for European citizens, and both the European Commission and Member States (MS) expect great benefits from new, information and communication technology (ICT)-based healthcare solutions. Our European eHealth for Safety study (www.ehealth-for-safety.org) identified the potential benefits induced by the use of ICT along the full continuum of care, and provides a fresh perspective for advanced research in this area.

About 80% of medical errors begin with miscommunication, missing or incorrect information about patients, or lack of access to patient records. In England, an evaluation showed that lost or poorly completed records are a major factor in patient safety incidents. It is widely believed that moving from a paper to an electronic patient record (EPR) system would be the key to improving patient safety. In recent years, one of the most important developments in many European Member States has been the planning and implementation of electronic health record (EHR) systems at the national, regional and local level. EHR systems can fundamentally improve safety by supporting the continuity of care, from GP offices to hospital care, long-term settings, and even home care.

The European eHealth IMPACT study (www.ehealth-impact.org) showed that eHealth could indeed lead to better and safer healthcare, also rendering at the same time considerable economic benefits. An intriguing example of a successful large-scale deployment is IZIP, the nationwide Czech EHR system. This allows instant access to comprehensive patient information independent of the location of the citizen, supports continuity of care and achieves a significant reduction in duplicative examinations, tests, etc. (estimated at 7%).

The large-scale deployment of eHealth infrastructures also facilitates the broader implementation of other ICT tools that improve patient safety, such as Computerised Physician Order Entry (CPOE) or Decision Support Systems (DSS). DSS are built into most CPOE systems, providing basic advice regarding drug doses, allergy flagging, interactions etc. CPOE systems are a key technology to reduce medical errors. The e-pharmacy system at a UK hospital applies a combination of e-prescribing, e-dispensing (robot system), e-stock management and e-procurement for out-patients and discharged patients. Validated benefits include fewer prescribing errors, fewer dispensing errors (29% down from 30 to 21 per 100,000 packs), and shorter response time for urgent prescriptions (increase from 37% within one hour to 89%)

In this context, we must also mention computerised adverse event systems that monitor the occurrence of instances that could lead to adverse events and alert the clinician accordingly. Experience shows that integrated systems, e.g. combination of CPOE and alerting, are better accepted by professionals than stand-alone solutions. A key barrier to the wider diffusion of these systems is user acceptance. A deeper understanding of the complex cognitive and socio-technical interactions characteristic of healthcare processes will result in the design of even better systems to support safer outcomes in the hands of busy or poorly resourced physicians. Overall, ICT is an enabler that can revolutionise healthcare processes, and a key component of a safer healthcare environment. However, it is only one component, and management and cultural issues deserve the same attention.

Moreover, a holistic vision and strategy, also taking into account organisational factors, is mandatory if safety is to be strengthened for all - be they healthy citizens or patients in need of the health service.
A system that aims to prevent newborns from being swapped or kidnapped in hospitals, has received the RFID Award in the German Innovations Prize 2007, granted by Initiative Mittelstand, an association for small and medium businesses. The winner, BabyGuard WLAN Video, is the only baby protection system to be given an industry award in Germany.

Without using microwaves, but using harmless radio frequencies to detect newborn babies and their mothers, transmission works with three encryption levels: WEP, WPA, and WPA-2, with real time video streaming to mobile devices such as a PDA and laptop, via WLAN. When connected, whichever the mobile device, it can also control camera rotation and zoom. The real time videos are seen on the mobile with a slight delay of 0.5 seconds. Signals, on similar, or even the same, frequencies do not jam the connection. When launched at the computer fair CeBIT 2007, the system performed efficiently, with low quality loss, despite having about 240 other ‘hot spots’ nearby.

BabyGuard WLAN Video was developed by the Hanseatic Health Group, in collaboration with Munich-based Siemens Enterprise Communications. Further details: www.syntronrgmbh.de

THE MOTION C5
a mobile clinical assistant for nurses

Following international pilot studies, Intel Corporation and Motion Computing have released the Motion C5 – a mobile clinical assistant (MCA) for use by nurses.

Motion Computing’s C5 is the first product based on Intel’s MCA platform, the firm reports, adding that this is part of its efforts to better connect clinicians to comprehensive patient information in real-time. The lightweight, spill-resistant, drop-tolerant and easily disinfected MCA includes wireless connectivity to access up-to-date, secure patient data and physician’s orders; radio frequency identification (RFID) technology that enables rapid user login; a digital camera to enhance patient charting and progress notes, and track wound healing; and Bluetooth technology that helps capture vital data.

To refine their applications for use on MCA, Intel and Motion Computing report that they worked with electronic patient record (EPR) and other clinical software companies such as Allscripts, Cardinal Health, Center Corporation, Eclipsys Corporation, Epic Systems Corporation, GE Healthcare, iSoft, McKesson, Nexus, Siemens Medical Solutions and Welch Allyn.

Intel also conducted a range of pilot studies in hospitals worldwide, including Salford Royal NHS Foundation Trust in the UK, El Camino Hospital in California and Changi General Hospital in Singapore.

To understand the platform’s usage, usefulness and usability in the context of real clinical work practice, social scientists from Intel’s Digital Health Group conducted ethnographic studies of clinicians who used the MCA at each hospital. As Paul Ottelini, Intel president and CEO, pointed out: ‘The mobile clinical assistant was defined and shaped by the clinicians who will use it.’

During the first European pilot of this new type of computerised device, at the Salford Royal NHS Foundation Trust, phlebotomists (those who collect patients’ blood) and elderly care staff spent four weeks testing the MCA in an elderly care ward. Staff nurse Jenny Quilliam, said: ‘The MCA enabled me to have on the spot access for inputting patient details at the bed-side. I could look up results, check and make referrals as part of the ward round and support case conferences by having quick access to patient details.’

Details: www.intel.com/healthcare/mca
European Hospital

Again raising its Western profile – and going East

Ideal starting point for European Hospital to look beyond Europe and home in on trends and developments in Asia. In return, Korean visitors took considerable interest in our issues and news of European healthcare. However, we are long established at the ECR in Vienna. Nonetheless, again we found a lively interest in our publications, particularly the special issue EH at ECR, handed out at the stand and at entrances to the congress. The scientific programme and products exhibition again provided many new ideas for radiology topics for future editions.

We also used the event to attract high-profile speakers to contribute articles for European Hospital. Our 4th Hospital Management Symposium was also a great success (See box and our website). Now we are looking forward to meeting more of you at future medical and healthcare events.

54,000 visitors, 1,038 exhibitors = increasing success

KIMES 2007

During four days in March, 54,000 people visited the four huge exhibition halls that housed the 23rd Korean International Medical Equipment Show – KIMES 2007. ‘We’ve grown by 11% compared with last year,’ said Choong-jin Kim, President & CEO of the exhibitions organiser Korea E & Ex Inc. ‘Most visitors are interested in new trends in medical technology and were very happy with what was exhibited.’

Global, although there are several big, more internationally recognised medical shows KIMES has a difference: alongside western medical equipment it exhibits oriental medical products. ‘We’d like our exhibition to bring West and East closer to each other, so that the different cultures and traditions can enrich one other,’ said Choong-jin Kim. ‘KIMES is not only a platform for exhibitors, distributors and buyers; we also offer a comprehensive education programme: the exchange between doctors and industry is important to us. We want to meet the needs of users and keep up with developments in medical technology. We also work closely with the Korean Government to make Korea attractive for the worldwide medical market, to make KIMES more international. More than 30 sessions were held throughout the show period, organised by us with the media and exhibitors of KIMES 2007.

The hospital management conference for specialist physicians, for example, was organised by Korea E & Ex Inc and The Korean Doctors’ Weekly. KIMES co-organiser KDCA (Medical Devices Industrial Coop. Association) and KMDIA (Korean Medical Devices Industry Association) held over seven seminars on medical regulations and policies in Korea. Also, the Korean Small & Medium Hospital Association and exhibitors successfully held a seminar for targeted interests groups and, KOTRA and Korea E & Ex Inc held the NHS Medical Device Procurement Conference for Korean manufacturers exporting to Britain.

‘We’d like to build on this even further. Our objective is to offer a similar variety in medical technology, products exhibition and education as that found at MEDICA, held every year in Dusseldorf. Maybe we’ll succeed in becoming the MEDICA of Asia. It would be a great goal – I think we are well on our way.’

Nutrition and Health

Changed eating habits abet obesity

In Europe today, obesity is assuming epidemic proportions. Indeed, the number of our obese citizens has tripled during the last twenty years, and their numbers are still increasing. If nothing is done, the World Health Organisation (WHO) expects that, by 2010, there will be around 150 million obese European adults (20% of the population) and 15 million obese European children and adolescents (10% of the population).

Part of the reason behind this development is our changed eating habits: European citizens eat too much and do not exercise enough. In addition, the food we eat is too fatty and too sweet. Scientists consider the increased intake of fat to be one of the main causes of increasing obesity figures. The proportion of animal fats in our food increased from 20% to 43% over the last two decades. According to the WHO, Europeans consume, on average, 150g of fat per head per day. 80g is the maximum daily amount recommended as part of a healthy diet.

Additionally, the increased range of foods now on offer tempts us to eat more. According to the WHO a woman needs about 2,000 kcal a day to maintain her weight; men need about 2,500 kcal. In 1961, people had an average of 2,300 kcal at their disposal; by 1968 this had increased to 2,800 kcal. By 2015 it is likely to have increased to over 3,000 kcal a day. Another factor that is promoting obesity: At the beginning of the 20th century our annual intake of sugar was less than 5kg per person – these days, in Europe, that figure is somewhere between 40 and 60kg. According to the WHO, Europeans consume, on average, 2,800 kcal. By 2015 it is likely to have increased to over 3,000 kcal a day.

As a result of these excesses, our appetite for fat and sugar has risen. We need more fruit and vegetables. The strategy for addressing this obesity epidemic according to the WHO should have the following three cornerstones: Decreased consumption of fat and sugar; increased consumption of foods based around fruit and vegetables and increased physical exercise.