Cardiac herpes - Following an eight-month clinical trial, GlaxoSmithKline reports that its oral anti-viral treatment Valtrex (valaciclovir HCI) can reduce the transmission of genital herpes infection to a heterosexual partner. 1,484 healthy, heterosexual, monogamous couples in 21 countries took part in the study. It was found that a once-daily dose of Valtrex 500-mg capsules reduced the risk of transmission of symptomatic genital herpes by 75%, compared with the placebo, and reduced the risk of overall acquisition of the virus (with or without symptoms) by 48% compared with the placebo. The firm also points out that Valtrex significantly reduced the number of recurrences in the infected partner compared with the placebo - which is consistent with previous studies.

Since the British Department of Health (DoH) published its strategy: Delivering 21st Century IT Support for the NHS - a National Strategic Programme for IT, the project has advanced with all guns firing - and not without canons.

As part of the plan, by 2010, individual patients will hold their own individual National Health Service Electronic Patient Records (NHSEPRs), each containing details of their key treatments and care carried out within the health service or during social care. In addition, the NHS Care Records Service will connect over 30,000 GP's and 270 acute, community and mental health NHS trusts in one, secure national system. This NHS Care Records Service is grouped into two parts: 

- A National Application Service Provider (NASP) would be responsible for health services common to all users, nationally.
- Local Service Providers (LSPs) would be responsible for services delivered at a more local level, covering five regions grouped as ‘clusters’.

Together, the LSPs and NASP would support the NHS Care Records Service by ensuring the integration of existing local systems and implementing new systems (where necessary).

Clearly the possibility of gaining such huge contracts puts businesses into competitive gear. But before all the contracts were granted, Richard Granger, the NHS IT Director-General, decided to go to war on pricing.

When, after apparently gaining ground on costs and contracts were awarded covering the UK’s Eastern and North West and Midlands Care Records Services, Granger stepped up his price war and its range, warning other bidders for this and PACS system needs, to reconsider. London’s Financial Times newspaper quoted him saying, in an interview: ‘We have seen big cuts in the prices for electronic patient records, for servers and for other infrastructure. We now need to see the same for picture archiving systems (PACS). If we don’t get that, we will subject the suppliers to radical surgery.’

Contract bidders told to think again
PURCHASING

A global catalogue of courses

The 14th edition of the catalogue ‘Medicine & health 2003/2004’ provides comprehensive information covering some 2,500 ‘flagship’ courses held globally, plus offers from over 700 renowned universities, non-governmental organisations or international organisations, e.g. the World Bank Group, and the World Health Organization.

This forms a guideline for targeted education and career planning for professional nurses, medical professionals and experts in healthcare interested in further training.

Available in English and German, and with 256 pages divided into 9 chapters, the book focuses on:

- Management and quality assurance
- Humanitarian assistance and complex emergencies > missions abroad
- Developing health co-operation > missions abroad
- Interdisciplinary medical education
- Continuing education for medical specialists
- Public health

- Research and evidence-based decision-making

Course content, plus requirements and conditions for participation, and course organisers’ contact details are given. The publisher points out: ‘Medicine & health especially valuable as it also contains an address directory of more than 700 international organisations and universities.

Moreover our editors worked out lists of important websites, periodicals and books. The course descriptions are meaningfully supplemented by scientific papers and articles by renowned authors.

Medicine & health 2003/2004 costs €37.70, (Austria and Germany) €39.70, (Europe) €49.00 (overseas).


MERGER TO BOOST EU TRADING continued from page 1


Further details: www.kimes.info

KIMES 2004

19-22 March, Seoul, Korea

Up to 750 companies from 30 nations are expected at the 20th Korea International Medical & Hospital Equipment Show (KIMES). The exhibition area covers 25,101 square metres, and the organisers report that 12,000 items in 500 medical categories will be displayed. These include equipment for consultation & diagnosis, clinical examination, radiology, surgery, physiotherapy, ophthalmology, dentistry, A&E, oriental medicine, pharmacueticals, disposables, etc. There will also be a section on hospital management.

About 60,000 people are expected to visit the trade fair, and medical conference plus seminars.

GUNNING DOWN JIT AND PAYS contracts continued from page 1

He had also implied that, if PACS and LSP contract bidders’ prices were not lowered, the government would build its own systems (although the NHS had attempted in the past to produce PACS systems in-house and apparently found this too expensive and time-consuming to be feasible).

Following much hammering, through recent months, contracts were announced to provide the public with individual NHS electronic patient care records (EPR) - that is, all contracts except one.

British Telecom (BT) was awarded a £620 million 10-year contract to construct the infrastructure that will provide 50 million of England’s National Health Service patients with their NHS EPRs.

BT then sold a £99.9 million 10-year contract covering London regions, and the firm Accenture won a £109.9 m 10-year contract to serve the North East, and also later gained a contract for the Eastern Region. The contract covering the North West and West Midlands was awarded to the firm CSC.

Then Richard Granger suddenly postponed the award covering the south of England, ostensibly ‘to give each of the contenders more time to focus on quality and price’.

Further ranting the bars, he added that he might invite other bidders to tender if the price didn’t turn out to be right.

Bidders for the last contract: The Fujitsu Alliance, PlexusCare and SchumlerSema. Finally, at the end of January, the last LSP contract, worth £8.9bn and running till 2013, was won by Fujitsu.

Richard Granger is said to be satisfied that the NHS had driven down costs by using commodity-based pricing.

(Now an electronic booking service! See page 9)

Agenda

Today

EU 14/04
Germany - The organisers of MEDICA - the world’s largest medical trade fair, held annually at Messegelände Düsseldorf - have reported the highest number of visitors to the event in its 35-year history. In November 2003, 134,700 professionals passed through the gates, 2,200 more than in 2002. Over a third came from abroad, which gave the c. 3,900 exhibitors from 65 countries ‘... excellent opportunities to establish contacts with relevant decision makers from all over the world’.

A walk through the 17 fully-occupied exhibition halls confirmed the role of MEDICA as a barometer of the medical industry’s innovativeness, said the organisers: ‘Major progress was demonstrated, for example, by medical implants, where the trend is towards biological instead of metallic materials. In addition, replacement joints are being launched that can precisely reproduce natural movements and movements. There is also an increasing dominance of the “Lego” principle. Implant components can be joined and combined in an individual manner.’

Important developments were also seen in consumables. For example, a new safety cannula, launched at MEDICA has a protective mechanism that is easily triggered manually, and this slide over the cannula to lock irreversibly after use.

Advances in laboratory technology and diagnostics were key subjects of discussion at the Congress - and particularly biomedical applications. ‘In diagnostics, so-called bio-chips provide information as to whether, as a result of certain blood parameters, the risk of some illnesses (such as a heart attack) is higher. Even bio-chips that can prepare a complete hormone profile from blood are being developed, and new bio-chip readers enable quicker and less error-prone evaluation than conventional analysis devices,’ the organisers pointed out.

In medical technology and electro medicine, the presentation quality achieved by imaging devices can increasingly replace painful and time-consuming invasive diagnostic procedures - as seen in the latest multifeature CT scanners for cardiodiagnostics, that supply top quality images and precise therapy planning in minutes - and at considerably lower cost than in invasive examinations.

IT - Software to merge the individual ‘islands’ of specialist clinical departments (radiology, cardiology, etc) into a complete hospital information system (HIS), meant departments can continuously update electronic patient files as treatment progresses. Workflow business software can also help with the new settlement system that demands lump-sum case amounts, by enabling treatments to be documented in a perfect manner and with economic effects monitored. Such systems were demonstrated during user forums: MEDICA meet IT and MEDICA MEDIA, as well as in the Integrated Healthcare Enterprise Forum, where users also reported experiences in using new software and IT solutions in clinical practice.

Traditionally focusing on the transfer from theory to practice, the MEDICA Congress plus courses and seminars covered practical everyday medicine as well as trends in science and research. Progress in cardiology and molecular oncology, early detection of dementia, and minimally invasive surgical techniques were among the themes. ‘We clearly hit the target with the programme offered,’ said Gerd Fischer, General Secretary of MEDICA Deutsche Gesellschaft für medizinische Diagnostik (German Society for Medical Diagnostics). The 26th German Hospital Conference was completely dominated by the health reforms and the introduction of the new settlement system for inpatient care units. Over 2,000 congress participants obtained information on the consequences for hospitals and clinics resulting from the reforms. Congress President Wolfgang Pföhler said: ‘Against the background of current developments in healthcare, the Hospital Conference succeeded in convincing through a combination of health policy and practice-oriented subjects.’

ComPaMED, held in conjunction with MEDICA as an international trade exhibition for the medical production supply market, had 182 exhibitors presenting raw materials, primary products and components for the manufacture of medical products. This year, it was not possible to meet all exhibitor requests for increased space, which will not be the case in 2004, when ComPaMED will be held in a new exhibition hall.
When Samuel Smith set up his clock and watch-making business in London, in 1851, he could not have imagined that he was laying the foundation for today’s Smith’s Group, the international engineering company that produces aerospace systems, detection systems, mechanical seals and even medical products. Still headquartered in London, but with production in the UK, USA, Europe, and Mexico, (KEN - OTHER PLACES?) Smith’s shares are listed among the 100 leading UK companies and sold only via the London Stock Exchange.

Recently the group streamlined its medical devices subsidiaries to form one global organisation - Smiths Medical Systems - drawing together over a dozen subsidiaries. Lawrence Kinet, Group Managing Director of Smiths Medical, explained the strategy behind this amalgamation in an interview with Brenda Marsh, Editor of European Hospital.

A t the turn of the millennium, Lawrence Kinet (55) joined the Smiths Group Board as an executive director. In the same year, when appointed Group Managing Director of the group’s Medical Systems division, he began to analyse its medical enterprise as a whole. With some 25 years in the medical devices industry behind him, he already had preconceptions about the operation: “Before joining the company I saw a very good business, and very good products. Later I found it had very good people - and I could see the advantages of those strengths. But, given their independent basis, the groups couldn’t thread together. There were over a dozen different companies, and Portex, for example, was two separate companies using the same name, but they even had different logos.”

“What was needed was an analysis of strengths - which included the manufacturing of plastic-based products. Disposables - a great field, where medicine is moving quicker. It was clear we would have to change - shifting towards the customers’ standpoint. To reflect the globalisation of the medical devices market we needed a single global strategy for research and development, manufacturing and marketing. Without that I didn’t think we could add value in the long term.’

In 2001 Smiths Group paid £35.6 million to acquire Bivona Medical Technologies, which specialises in silicon tubes for anaesthesia and critical care - complementing Smiths’ extensive Portex range of single-use devices, sold worldwide. The Portex PVC tubes are lower cost, more rigid devices, typically used for short procedures. For example, in babies and infants, for long term use, a softer material such as silicon is preferred, so bringing in Bivona significantly extended Smiths range of single-use disposable devices, added new product and material technologies, and strengthened the group’s position in the paediatric devices market.

Annual sales reported for Bivona products were US$21 million, but only 20% of this turnover came from beyond the US. In the parallel year Smiths medical division reported sales of £150 million and profits of £38 million. Therefore, boosted by the strong global presence of Smiths, the acquiring company pointed to greater international sales potential for Bivona.

In 2000, Smiths paid US$26 million for an anaesthesia (epidural) kits and trays business from a division of Abbott Laboratories, and production was transferred to Smiths Medical plants in the US and UK.

In the same year, Smiths agreed with Medsys PLC to exclusively distribute the firm’s Futura safety syringes and safety syringe products in North America, Japan and the UK. Due to legal requirements to protect human nurses from needlestick injuries, and greater awareness of the need for safety

The new name at MEDICA

As you turn the pages of this issue of European Hospital we invite you to visit a new website - www.medica.de that has been launched this month. This website is the official website of MEDICA - the world’s leading medical technology fair. MEDICA is bringing together medical technology companies from all over the world to present their products and services to the professional visitors of the fair. MEDICA is the leading platform for the medical technology industry, offering an unparalleled overview of the latest developments in medical technology.

Through MEDICA.de you can take a virtual tour of MEDICA, get the latest news and information on the fair, and discover the products and services of the leading medical technology companies. MEDICA.de is your one-stop-shop for all your medical technology needs.

We hope you enjoy exploring MEDICA.de and discovering the future of medical technology.
Tuttlingen firm, Trumpf began to offer complete systems. ‘Other firms offer the light;’ he points out, ‘but we are an owner-run company, so not dependent on quarterly reports, and we can plan long term. If new business sectors and trends become strategically important for us, we can adjust accordingly.’

In the next two years the firm plans to ‘sensibly combine products’ in its portfolio, aiming to expand in the systems field.

Trumpf also has a separate consultancy firm, to advise on and equip operating theatres, alongside the customers, he emphasises. ‘We advise hospitals about optimising processes – key words: patent logistics and workflow.’ Often, he points out, existing consultancies do not have the practical know-how of the Trumpf employees, e.g. nurses with years of experience in operating theatres. Hospitals see a potential for change, but do not know how to optimise processes, so we assist either by introducing new products or just in consultation.’ Hospitals may request a precise analysis of their processes and workflow, and are happy to pay for that service, he points out. ‘This is certainly a good area of activity – particularly in the US and Asia, where consultancy needs are higher. We want to become international, i.e. to found our own subsidiaries in economically viable markets, and to develop a network of international distributors.’

With representatives in the US and Asia, last year the firm established subsidiaries in Italy and France, which are, Dr Krebs points out, Europe’s most important markets for theatre tables and lights. ‘We intend to become a market leader like our parent company. But this will only be possible if we base ourselves in a stable market such as Germany, and tackle other markets from there. We are only just beginning, internationally.’

Following the launch of their joint venture, last July, Dräger Medical reports: ‘Thanks to the quick integration of the new business unit Monitoring, the company has already achieved its first financial successes during the third quarter of 2003. To date, the new product line has contributed almost €50 million to the third-quarter turnover.’

At Medica 2003 Dräger Medical unveiled the next generation of the firm’s Infinity Patient Monitoring System, which provides therapy, monitoring, and IT both in critical care and at the bedside, because, the firm points out: ‘... with the Infinity Explorer diverse types of information – whether it is data concerning anaesthesics or intensive care medicine - can be integrated’.

Along with general monitoring, Infinity Explorer provides data on ventilation and treatment, etc. plus lab and X-ray results, all of which are constantly accessible by clinical teams – via the Infinity Network.

‘The quick realisation of the benefits the joint venture has generated for our customers was our first priority – and this was shown at Medica 2003, when we presented a new patient monitoring product family as well as different integrated solutions for the support of clinical processes,’ said Dr Wolfgang Reim, President and CEO of Dräger Medical.

The biggest division of Drägerwerk AG, Dräger Medical – a Dräger and Siemens Company – is headquartered in Luebeck, Germany, and has R&D and production plants in Europe, the USA and China. The firm employs some 5,700 people worldwide to produce integrated systems throughout the patient care process in all CareAreas™, i.e. emergency, OT, anaesthesia, critical, perinatal and home care.
Proven Outcomes in Radiology.
It begins with you. By understanding what you need most we’re able to develop solutions that are most valuable to you. The advances we’ve made have helped radiologists provide more informed diagnoses in a shorter period of time. Dramatically improve clinical workflow. Explore more non-invasive methods. And identify diseases in earlier stages.

Our goal is clear. To help you achieve sustainable, meaningful results. Results that come from integrating medical technology, IT, management consulting and services in a way that only Siemens can. See what we see. Tangible solutions.

Siemens Medical Solutions that help
We see a way to offer the world’s fastest CT scanner with 0.37s rotation time.

We see a way to quadruple patient throughput in PET/CT.

To increase productivity by up to 50%, in addition to decreasing hard copies by as much as 90%.

Results may vary. Data on file.
The Netherlands - The Sint Maarssenkliniek Hospital, Nijmegen (one of Europe’s leading hospitals in orthopaedics, rheumatology and rehabilitation) has signed a multi-million euro supply and service contract with Agfa for a complete ADCTM CR (Computed Radiography) system, including the hospital-wide RIS/PACS system.

Belgian and Luxembourg hospitals - Last year Agfa also signed agreements for the IMPAX solution with seven hospitals to provide inpatient and outpatient digital radiology services, a large new hospital in Ghent, and five sites in Luxembourg.

Communications contracts flow in

Australia - Last September, Agfa also agreed a $17 million PACS/RIS contract with another major primary care health provider.

Vodafone - The firm employes 50,000 in 50 countries, and clients introduced mobile technologies for healthcare professionals to access patient records securely via portable computers.

A trial of Sun Microsystems’ Linux-based Java Desktop system has been ordered by Singapore’s National Healthcare Group (NHG), the world’s largest healthcare operation, uses about 800,000 PCs.

If you look at the different products you use have country-specific features. If you would never buy us a large digital medical weight scale. If you would never buy us at all a new kind of digital. If you would never buy us a large digital. If you would never buy us a large digital. If you would never buy us a large digital. If you would never buy us a large digital. If you would never buy us a large digital. If you would never buy us a large digital. If you would never buy us a large digital.
Colentina Central Clinical Laboratory opts for public-private partnership

By Manole Cojocaru of the Romar Medical Centre, Bucharest, Romania

Appropriate PPP with the Romar Medical Centre has enhanced the quality, efficiency or effectiveness of capital projects or operating programmes and services, including infrastructure and services benefiting the public. The application was made by the Colentina Clinical Hospital and Professor Sorin Simion MD, Director General, representative for each public partner, plus a private partner, signed the application. The state retains responsibility for commissioning services, on behalf of the collective. We recognise the distinction between the public and public-private sector, at present the hybrid public-private laboratory (a public good), and our current practice is to consider the division of medical laboratories between a public and private sector as normal. The Public-Private Sector needs to carefully analyse what limits public-private sector investment and performance in terms of new technology, higher education and the skills development of highly qualified personnel.

Health reform, urgently needed in Romania, will make hospitals more accessible in the future. Our country is also engaged in a transition from the public medical laboratory to a public/private laboratory - and hospitals play a crucial role in this transition.

In 2003, a collaborative pilot public-private partnership (PPP), which, as a business model, allows the private sector to finance the necessary infrastructure and improve service delivery to the public, was established. This involved Colentina Clinical Hospital, in Bucharest, and its private-sector partners. This pilot project has demonstrated excellence and innovation in the establishment of public-private partnership, to benefit the public.

The PPP is a co-operative project between the public (Colentina Clinical Hospital) and private sector (Romar Medical Centre), built on the initiative of each partner, which develops or improves facilities and/or services needed by the public through the appropriate allocation of resources, rewards and responsibilities. A partnership contract is essential, to protect Colentina Clinical Hospital. Additionally, built into the contract must be mechanisms and processes to manage the process of collaboration between our hospital and the Romar Medical Centre.
HOSPITAL CONNECTIVITY

Point of care testing (POCT), near patient testing and connectivity are expected to reshape the European diagnostic equipment market over the next decade, according to a report published by the international consultancy firm Frost & Sullivan (http://healthcare.frost.com).

Greater connectivity at the POCT is expected to enable prompt and effective treatment, the report states: ‘Improved clinical outcomes, especially for time-sensitive indications such as cardiac diagnostics, are likely to encourage the deployment of POCT or near patient tests. The development of POCT connectivity is also anticipated to reduce costs associated with a centralised laboratory. These, along routine hospital modernisation are set to boost uptake of POCT in Europe, showing a significant increase in use in 2005-2006. Three phases are likely to mark the evolution of POCT and connectivity - the connection of POCT data to the laboratory information system (LIS), the integration of radiology data from the picture archiving and communication system (PACS) with diagnostics from the LIS, and the roll out of a fully integrated system with hospital-wide data availability using the hospital information system (HIS).’

The public sector holds the greatest potential in terms of usage volume, but budgets have impeded the uptake of POCT. ‘The difficulty of quantifying financial benefits in terms of workflow changes is, moreover, retarding the implementation of these new technologies in public sector hospitals,’ the report continues. ‘Where a more holistic view of hospital operations is taken, POCT and near patient testing have advantages for patient care, and in some instances, overall costs. Improved aspects of patient care will, in turn, encourage many non-laboratory healthcare professionals to accept even champing POCT. For instance, early treatment of clinical conditions diagnosed by POCT devices is inevitably much less expensive than remedial care following patient deterioration.

New hospitals or facilities are expected to offer the greatest potential for uptake of POCT and near testing, and their experience should create a positive ripple effect, the report points out. However, one of the issues to overcome is the concern of centralised laboratory staff that POCT and near patient tests will render them redundant, the report points out. Another is the impact that such technologies will have on healthcare professionals involved in POCT from a non-laboratory background. ‘The responsibility of misdiagnosis will shift from a centralised service to these non-laboratory staff, thereby increasing their workload pressures.

Full details of costs, staffing changes, work practice changes and clinical outcomes must be publiclyised, the report concludes, which would require ‘a great deal of confidence on the part of the vendor, as it may reveal commercially-sensitive aspects of their activity.’


‘Hospital Connectivity - Impact on Point of Care Testing.’ Code: B264

continued from page 9

Finance Initiative (PFI), Additional benefits are created and shared, and the parties are kept within a co-operative relationship. These include gain sharing, and reducing running costs. Expansion also has increasing significance, as Colentina Central Clinical Laboratory well knows, for it is a demonstration of effective public-private partnership (i.e. to create a national network)!

Undoubtedly we need to do more in that area because it can help solve pressing financial, technical or managerial problems. Our Public-Private Partnership delivers more cost-effective services and generates more flexible revenue sources. Deepening that partnership, and investing far more heavily in it, will ensure our continuing success in the contemporary global economy. We believe we can achieve remarkable results in fields such as healthcare.

In fact, the greatest challenge for Romania in the future will be to match PPPs in our hospitals (we will aim to find new ways to financially support our development hospital). We look forward to working to make that happen.

This is why Romania aims to draw up the Public-Private Partnership concept. I have argued the necessity of establishing a PPP in support of renewed and sustainable economic and social development through more effective knowledge creation, application and transfer.
C

ommunications is a hot issue at this year's congress. Radiologists quickly learned the value of hospital IT systems and recognized the impact inter-modality IT integration will have. But do administrators understand their enthusiasm, or will they continue to stare at foot bogged in budgets, and not look ahead to see PACS as a potential rescue? at least from many radiology costs? To ensure a clear view of PACS is given, the ECR has drawn in expert speakers for the new Administrators Symposium.

The time is right to invest in PACS, because progress in its development is now at a reasonable level, said Professor Helen Carty, President ECR 2004, in our recent interview. We have to convince administrators that this technology is not a toy developed for radiologists, but a means to benefit patients - to speed up care by having images where and when you need them, with no hold-ups due to mislaid files, and so on. With this assurance, you can better plan some of the patients' appointments and care.

However, it's no good if an IT department orders radiologists without understanding their needs, nor for radiologists to order systems without knowing about IT possibilities. They need to work together. To this end, for the first time ECR 2004 will draw together radiologists and hospital IT specialists and those involved in planning future purchasing for radiology departments.

In terms of paying for IT equipment, the professor points out: 'It's a tragedy to pay more than we need to pay, or to pay less and find the system doesn't work. We have to pay the right amount, to obtain a) reliable and b) last results. If you can't work in a fixed time, people simply will not use the technology supplied. '

In her passionate belief that 'radiology is the future', and IT is an intrinsic part of that, Professor Carty also pointed out another benefit of communications. The ECR is an extremely successful organisation in terms of innovation and progressive efforts to spread knowledge, not only to those who can attend, but those in developing nations who cannot.

Following last year's congress, of which she was also President, the ECR website presented 'a cyber congress', ensuring many more radiologists around the world could benefit from the event than those lucky enough to attend. Professor Carty is also keen to continue to focus the energies of ECR members on the use of video conferencing... a huge international resource for teaching', she says, also pointing out the organisation's work to link with the World Health Organisation (WHO) initiative - to bring advances in radiology to far away places such as Africa and Bangladesh. 'By using the net, in the broadest sense of the word, real time images and innovations in our field can be accessed. However, there are problems, the biggest being not access to computer equipment - but clean phone lines.'

Professor Carty is also keen on the progress of molecular imaging, and this will be the first ECR congress to focus sharply on this. She talks of this field as 'going down to cellular level very accurately... imaging nerve fibres... seeing pathways, then contemplating a second phase, understanding tumours, which can not be understood to the same extent by nuclear medicine.' Knowledge about a tumour's permeability and targeting new drugs to the centre, and imaging their effects - a combination of pharmacists and radiologists... companions in research!' understand it at a very superficial level', she points out, but this is clearly exciting and - again, bodies well for the future.

PET CT is also expanding, and again developing the relationship between those in nuclear medicine, physics and radiology. Image fusion, to demonstrate a functional problem, will help surgeons in planning operations, she points out, and it promises to improve the saving of morbidity and alter invasive management. 'This has a potentially significant impact on morbidity. If you can show it, with a bit of luck you can get away with it!' the professor adds.

CT scanning of arteries is another field to excite, with the possibility of 3D images 'not just of the front or back' but also the sides of arteries'.

Non-invasive imaging is rapidly replacing invasive techniques. 'There are papers presented on cardiac imaging,' the professor points out, indicating that invasive work may become 'for treatment only'.

Her efforts for this congress have not only been drawn to the biggest issues and excitement about high-tech innovations, but are equally spread. Teaching is another issue. Of concern to Professor Carty is the general lack of paediatric radiologists, and that children are not sufficiently treated as such in radiology. 'There is too little paediatric radiology in general training,' she says. The general radiologist is not incompetent, but has less understanding of child patient needs, for example, than they do of the adult chest. 'They need to look at cases in that way, not as a side line of disease. Otherwise it can lead to trouble.'

When outlining anything from major to minor for ECR 2004, Professor Carty added that all major manufacturers are producing scanners that are moving in the same general direction - and visitors to the stands or at presentations certainly will view their many promising and perhaps unexpected advances this year. And of no less importance, also keen to give ECR visitors what they want, when the professor heard of a huge demand for extra space for poster presentations - that's what they have.

Brenda Marsh, Editor European Hospital

Hans-Peter Bursig, Secretary General of COCIR (The European Coordination Committee of the Radiological and Electromedical Industry) outlines achievements and new goals for the future in Europe in a live demonstration of IHE Integration Profiles with commercially available IT products. Additional demonstrations are planned in Germany, Italy, France and the United Kingdom this year. IHE in Europe is now based on national IHE initiatives in Italy, France, Germany, the United Kingdom and the Netherlands. Additional initiatives are currently being set up in the Nordic countries and Spain. The IHE concept has also spread from the initial field of radiology into IT infrastructure issues and applications in cardiology and clinical laboratories.

Five new IHE Integration Profiles are available to solve problems associated with IT infrastructure. A first integration profile for clinical laboratory was developed in 2003. Activities in the new field of cardiology started in December 2003, in a joint approach by the European Society of Cardiology (ESC) and the American College of Cardiology. Although initiated in radiology, the IHE concept has never been limited to this field. In particular, the new IT Infrastructure Integration Profiles increase the attractiveness and relevance of IHE to providers of hospital information systems (HIS).

Maintaining achievements in the various fields will be no easy future task. A growing number of companies need to be acquainted with the existing IHE Integration Profiles and the IHE Technical Framework - at the centre of the IHE interoperability concept. At the same time, the IHE Technical Framework will need to be maintained and developed further, to align with ongoing technical developments.

The IHE, initiated in Europe, North America and Japan have therefore decided on an organisational structure for the further development of the IHE concept. All technical development work, like the development and maintenance of IHE Integration Profiles, will be carried out in field-specific IHE Technical Committees. Currently, technical committees exist for the fields of radiology, IT infrastructure, clinical laboratory and cardiology. All IHE Technical Committees will be open to international participation. Their task is to develop and maintain a single and coherent set of IHE Integration Profiles for their respective field. The goal is to come to global solutions that require only minor adjustments to local requirements. This will also help to reduce the cost of integrated healthcare IT applications.

At the same time, the "deployment" of IHE will be the responsibility of the regional IHE initiatives around the world. Deployment includes education, promotion and demonstration of IHE achievements. In addition to this, regional IHE activities will ensure that local requirements are known to and being considered by the IHE Technical Committees. Through this set up, all participants, even small and medium-sized companies, will have the possibility of participating in IHE development activities.

Based on this success, the global IHE community is currently discussing new goals for the future. IHE has successfully demonstrated that the integration of IT systems within clinical departments is possible. The result of such integration is de facto an Electronic Patient Record (EPR) at department level. The inclusion of the "Admission, Discharge, Transfer" (ADT) component of HIS in IHE Integration Profiles is making further integration and interoperability between clinical departments possible. Following this approach, an integrated EPR at hospital level could be achieved. A final step could then be to open this EPR for communication with external partners, e.g., outpatient and rehabilitation facilities as well as GP offices.

This pragmatic, step-by-step approach to the building of the EPR has a number of advantages over a single EPR. Existing healthcare IT solutions could be used as a foundation for the project and the project could be extended. Fear of unforeseen problems and the risk of organisational resistance could be reduced. Also, the project could be started gradually and extended at each step. This would ensure a better acceptance among the employees involved. The project could be divided into smaller steps and would make adoption possible.

Developing the existing IHE Technical Framework further into this exciting new direction would only be possible through the engagement of all stakeholders in healthcare IT: decision makers, health professionals, solution providers and, most important, the patients.

(Details: www.ihe-europe.org)
Investing in medical technology and IT innovations

By Maximilian F. Reiser MD

tems must be able to communicate with one another to ensure that radiological results can be efficiently used for patient management.

Doctors in wards and out-patient clinics have access to radiological images and diagnosis data through mostly web-based image distribution systems. Appointments and patient transports are coordinated with other examination and treatment appointments in a sensible way.

The decision makers can only be convinced that investments in highly modern radiological examination equipment and in networking the hospital's IT infrastructure make sense if future economic advantages can be shown. Not only savings in material costs but also reduced personnel costs must be achieved.

Apart from improvements with internal structures governing costs and services, competition with other service providers and patient satisfaction are other important driving factors for hospitals. Radiology and administrative information technology systems have been a driving force behind the development and use of comprehensive IT solutions in hospitals, partly due to the high volume of data created by imaging and the need for 24/7 availability and access to data. Integration of radiological subsystems into administrative and clinical workstation systems is essential. Particularly due to the DRG-based documentation requirements, whereby doctors and medical controllers need easy and comprehensive access to all diagnosis and treatment data.

Being a doctor has become imperceptibly but increasingly less attractive - apart from other factors, due to an overload of legal and bureaucratic requirements as well as escalating needs for documentation. In this context, effective support through purposeful IT investments might make hospitals outstanding and help them to attract highly qualified new medical staff.
The round table

As a radiologist who has spent much of his career speaking to other clinicians about diagnostic findings I feel well prepared to meet the challenge of transparent communication. Dialogue is the basis of trust between all participants at the University Hospital Hamburg-Eppendorf’s table. Trust in turn is the central requirement for success in today’s healthcare market. What is the main problem in communication between medical staff and management?

Based on their ethical vocation, physicians are a special breed of people indeed. On a daily basis, the physicians, as well as nurses and other healthcare providers, are confronted with humans in need of help. Ethics and morals dictate much of our work. As medicine is slowly transforming from a physician-dependent art to an evidence-based science, we have learnt to respect the importance of diagnostic protocols and therapy guidelines. Furthermore, we have been made aware of the severe economic constraints burdening our societies at large. Misunderstandings between healthcare providers on the one hand and hospital administrators on the other, are frequently related to misunderstandings of their different terminology. To bridge this gap, we need individuals who speak both languages. In this respect I have found my training as a radiologist at least as helpful as my training, several years ago, in management and business administration at the University of St. Gallen. The ability to translate a budget with an associated balance sheet into a language easily understood by physicians and other healthcare providers must be an integral part of any communication strategy designed to build trust.

Is the aim a compromise between clinicians and management? ‘As said, healthcare providers and hospital administrators must realise they are sitting around the same table to represent their respective medical institutions. Thus, reaching an agreement on strategic goals and operative day-to-day management goals is not an option - it is imperative. Reaching agreement requires tremendous effort and willingness from all participants at the table. Hospital administrators must communicate openly and directly in a language understandable by healthcare providers. For their part, healthcare providers must be willing to absorb and accept the communicated messages.

Is an international outlook important in the growing competition between hospitals? ‘We increasingly view the Hamburg-Eppendorf University Hospital as an economic enterprise. In fact, with a budget of 430 million Euros and over 5,000 employees, we are one of Hamburg’s larger companies. Similarly to other firms, we are developing marketing strategies for new products and new markets. Thus, we will begin to offer integrated health-care products comprised of elements of in-house treatments as well as rehabilitative medicine. We are venturing, for example, into traditional Chinese medicine as well as preventive healthcare programmes.'
Teamwork is vital for successful PACS

By Alan Budge, General Marketing Manager, Ferrania Imaging Technologies

Much has been written about the developments of PACS and RIS/PACS and their importance within the Integrated Care Record System. Now, with the recently announced UK National Programme for IT (NPfIT) radiology images and reports are also rightly seen as one of the key links between the primary, acute and tertiary care provided by NHS Hospitals/Clinics.

There are many successful PACS installations within Europe, and most are where the importance of the partnership between radiographers/radiologists (as service providers), IT (as the equipment link) and the clinicians as users of the service, has been instrumental right from the planning stage. Hospital IT departments are usually repositories of sound information and expertise about data storage and networking; now the vast amounts of digital data and information produced daily by the imaging department represent one of the biggest challenges to a successful NHS Care Record System (NCRS), for the IT fraternity.

This information and data not only needs to be able to travel quickly and accurately around the Hospital Trust network, to clinicians requesting it - wherever they may be - but may well need to travel outside the enterprise itself, so interoperability between sites is important. The successful installations will have recognised that the partnership approach must involve administrators and hospital managers, to ensure that procurement of systems is fully comprehensive and cost-effective.

A particular area often overlooked is the integration of existing equipment, which either has to be brought up to interoperability standards for interoperability. As part of the programme. Its positive impact will also enable access to digital images across multidisciplinary team (MDT) meetings. (Radiology reports are a key diagnostic service, used to inform decision makers in the MDTs. The ability to access these on-line and, if appropriate, remotely, is particularly important for large rural multi-site Trusts such as Newcastle. It supports the development of long-term information across the care pathway.

The PACS/IT/Clinician/Admin Team must embrace new technology. Previous solutions will allow simultaneous access to medical information across the care pathway. The architecture also will allow the delivery of PACS solution within a service delivery and, particularly, as part of the programme. Its positive impact will also enable access to digital images across multidisciplinary team (MDT) meetings. Radiology reports are a key diagnostic service, used to inform decision makers in the MDTs. The ability to access these on-line and, if appropriate, remotely, is particularly important for large rural multi-site Trusts such as Newcastle. It supports the development of long-term information across the care pathway.

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15-minute reports

By Armin Scheuer

Radiology reporting is becoming far quicker due to the use of speech recognition. By automating and centralising document creation, United Surgical Partners Europe (USPE) - the leading private medical group in Spain - now delivers radiology reports within a guaranteed time of 15 minutes maximum, after dictation.

"Faster document creation is a clear improvement opportunity for hospitals - both from an economic and a service point of view," Santiago Raventos, IT manager at USPE, pointed out. "Professional speech recognition solutions provide complete workflows to optimise document creation."

USPE uses SpeechMagic - the speech recognition solution from Philips - which supports network solutions and offers flexible correction mechanisms, such as self-correction, direct on screen, deferred correction by a secretary or outsourced correction. All arc aspects critical in setting up a centralised document creation system.

SpeechMagic has been integrated in the Hospital Information Systems (HIS) of three hospitals operated by USPE. Radiologists dictate reports on their PCs and create a sound file associated with the patient number generated by the HIS. This sound file is sent automatically, through the private LAN, to the data centre in Barcelona, where the speech recognition servers are installed. Here they are converted into written text and then sent for correction to Pyramedica Net Centre - a provider of medical transcription services. Back in USPE’s data centre, the corrected text is automatically stored in the corresponding patient’s file. The doctors receive an email confirming the report is ready for validation and can be printed locally, in the hospital where it was dictated. All this procedure occurs within 15 minutes maximum.

"We used analogue dictation before, and the doctors did not use computerised medical reports. Accurate medical reports," said Dr. Marisela Diaz Orive, head of the Imaging Centre at Clinica La Esperanza (Vitoria). "We now have out radiology reports on the same day and referring doctors can start treatment and transmittal. We also handle more patients with the same number of employees, meaning that our whole organisation has increased its profitability," she added.

The Newscastle on Tyne Hospitals NHS Trust (the Trust) is one of the largest major teaching Acute and Tertiary referral centres in the UK. With three main sites across the city and a number of smaller sites, the Trust serves a population of three million, employs over 11,000 staff members, and has over 700,000 outpatient contacts. The Trust’s annual income is £500 million.

Robert Shaw, Head of the Trust’s Information Management & Technology Department, describes the organisation’s migration to a PACS environment.
A few months ago, Philips announced the first hospital-wide implementations of the system in Denmark and Germany. The success in radiology has led to a push towards expansion. ‘At the moment we are experiencing a real rush from the medical sector,’ said Marcel Wassink, Managing Director, Philips Speech Recognition Systems. ‘Many radiology departments have doubled productivity as a result of deploying speech recognition, and it is only logical that hospitals as a whole want to benefit from this development.

Benefits profiles will be used to release benefits from other areas: e.g. water rates, when all ‘wet’ film processors are removed.

Other benefits: Clinicians benefit from quick access to images on wards, outpatients and theatres. Images and reports can also be accessed by more than one clinician in multiple locations - particularly important since the Trust has multiple sites.

Next? The Trust is expanding the storage and PACS/RIS system to migrate other image-using specialties across the Trust. Initially this will take Radiotherapy and complete the migration of Medical Physics. It will see the total number of images rise to over 6.5 million per year. The next phase will take in other specialties such as Ophthalmology, Dermatology, Genetics, Pathology sub specialties and medical photography. Ultimately this will deliver a single image management system for the Trust.

By creating a single domain and enterprise-wide storage, it is now possible under Active Directory to have single controlled access to multiple systems under a single log-on.

Other important consideration: the PACS/RIS system is integrated into the Trusts Electronic Records System through its Integration engine.

The Integration engine handles clinical and demographic messaging amongst the clinical and administrative systems - an important flexibility that allows the Trust to implement NHS Care Records Service from the National Programme for Information Technology, whilst allowing for separate procurements to satisfy requirements beyond the National Programme.

The project team: Phil Wilson, Robert Shaw, Peter Batesy, Dr Chippendale, Dr Mitchell, Louise Dryden, Phil Collins, Graham Hughes. From the outset of the project team, work across radiology, IT and neuro sciences was recognised. The team was developed from the three areas, mixing IT, Managers, Radiologists and Radiographers. Each team member brings an area of expertise and knowledge to the project, to enable more effective and informed decisions.

Confidence in the network ensures use

To maintain clinician’s confidence, the network has triangulation between sites and on each site. Storage Area Networks (SANs) will be mirrored over the network at two sites. Even if one of the SANS is taken out on a site, service can be delivered to the Trust. The network is also run to a quality standard with uptimes of over 98% - important because we are transferring the risk of uptime delivery for the PACS system to Ferrania.

The SANS will provide a centralised storage capability on each site to handle over 4.5 million radiology images annually. Speed of access to the SAN is an important consideration. When we mapped data flows across the Trust, we had to adopt certain switching architecture to deliver required access speeds. The SANS have a growth capability both within the managed service for PACS and to act as centralised storage for the other Trust applications.

This infrastructure will allow the Trust to progress towards a film-less environment, where clinicians have the confidence that images can be accessed 24/7. Once in a film-less environment, we can progress towards a radiology paperless environment for reports.

The challenge: Realising benefits - both financial and otherwise - is the key to the project’s success. Within the department, direct savings are to be made against the current software contracts and the films and chemical contracts. The Trust is using the Office of Government & Commerce (OGC), Managing Successful Programmes benefit management strategy to release other benefits.

Santiago Raventos now plans to equip all radiologists with SpeechMagic, to be followed by other departments.

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The German healthcare system, like many others in Europe, is facing a growing number of challenges. The current budget all radiological services, a telemedical link between Dachau and the central diagnostics department in Grosshadern was established. This link not only allows instant access to a highly qualified second opinion, but also saves medical on-call resources. Above all, due to this telemedical link, personnel requirements and thus costs have decreased significantly. Amper Klinikens' turnover its budget for medical-radiological staff to the Klinikum Grosshadern, in which turn creates additional development for physicians.

The active principles of successful cooperation are manifold: Klinikum Dachau's radiology services were significantly improved without increasing costs and, due to close cooperation with the famous Institute for Clinical Radiology, the new model has been widely accepted. In turn, the institute can train more physicians, who can gain more practical experience. In view of the critical shortage of qualified doctors - particularly qualified radiologists - the latter is increasingly important.

Teleradiology is being tested 'live' and further developed, joint research is planned and inter-disciplinary progress will be promoted. Integrated radiological services provided with cooperation of a public hospital and an academic radiology institution promises a win-win situation. Both sides will use its full potential, a number of legal issues must be solved. Moreover, several government agencies and authorities have to be convinced of the idea and integrated into decision-making, with utmost caution. Quick action is needed. Last not least, resistance born from fear or self-interest needs to be overcome.

All administrative obstacles have been overcome and the cooperation is considered successful by all parties involved. This may only be a relatively small pilot project, but it contributes to job security and to quality healthcare in difficult times.

Suppliers: easing the transition

Agfa has traditionally evolved from the classic film business - to which the whole organization was tailored for about a hundred years. However, with digitization, the company began to diversify into new product systems. Fifteen years ago, these developments centred around PACS, but now we are seeing a lot of innovation in the development - until things picked up! I think it's fair to say, in terms of computer radiography (CR) that Agfa has stayed pretty much ahead of the market, as well as in the development of hard copy - a kind of digital printing technology and I mean worldwide.

Our portfolio and volume is fairly even spread, certainly divided between the Americas and Europe, with, of course, the newly emerging markets such as China. Another very important market is India. A lot of consumers are rising to the sophistication of Western healthcare. We have also been a big step into the US market by acquiring Sterling, which was also a very strong base for development in the digital arena.

The organizational setup followed those developments. Agfa was, and still is, famous in image processing. We have been at the forefront of almost everything the world for the past 10-15 years. We’ve taken advantage of PACS in medical processing. We’re also developing a lot of IP and medical software. In image processing, we’ve been very active in recent years.

From the moment you enter IT, you discuss connectivity and where the business model you need is completely different. You need a complete new skills and product mix - a combination of hardware, software, consumables and services - and to learn how to provide services that encapsulate the operation of a system. So you can service it as an add-on to your customers. From that moment on, you can see how the business is evolving.

Likely outcomes of the implementation of comprehensive integrated IT strategy (ITIS) include re-engineered workflow in radiology departments and organisa- tional/cultural change to resistance. Therefore, effective change manage- ment during the transition phase is vital. Professional service vendors who can convince healthcare providers about a smooth transition during - and uninterrupted services after - PACS implementation are poised to reap a substantial market share. However, for new players, such an approach is often not viable as it would require a significant investment in direct sales. In such a situation, vendors may opt to leverage existing healthcare networks, such as hospital groups. Such an approach may not only increase the likelihood of successful implementation but also reduce the risk of project failure.

As the benefits of PACS and professional services are quantified through time-bound implementation and efficiencies achieved, organisational resistance is likely to diminish. The total PACS professional services market is expected to almost double to reach $8.5 billion by 2023, compared to $4.2 billion in 2018. The market is expected to remain relatively consistent over the forecast period, with growth rates in the low single digits. The market is expected to remain relatively consistent over the forecast period, with growth rates in the low single digits.

The initial PACS was radiology-based, but we are now evolving towards enterprise PACS, although the original configuration of the PACS system was very much about hardware. Then we moved into workstation, then acquisitions such as Mitra, a PACS development company, and Quadrat, which has a significant presence in radiology. We have been very active in recent years.

The German healthcare system, now nearing its 60th birthday, is facing a growing number of challenges. The current budget all radiological services. The Institute for Clinical Radiology at Grosshadern. The radiology services in Dachau are provided by physicians employed by the Dachau hospital but by physicians from the Klinikum Grosshadern. Dachau is currently looking for cooperation with several government agencies and authorities to be convinced of the idea and integrated into decision-making, with utmost caution. Quick action is needed. Last not least, resistance born from fear or self-interest needs to be overcome.

All administrative obstacles have been overcome and the cooperation is considered successful by all parties involved. This may only be a relatively small pilot project, but it contributes to job security and to quality healthcare in difficult times.
challenges for imaging to PACS

PACS professional services market is set to increase from €85.0 million in 2003 to €134.0 million in 2010, with project management accounting for the largest revenue share in 2010, due to major uptake in the UK, Germany, Italy and France, followed by systems integration, training and support and consulting services segments.

IT professional services vendors will need to maintain close working relationships with hospitals and offer innovative financial schemes, the report suggests, and those selling PACS services will also need to maintain a diverse client portfolio. Additionally, they will need to build and retain strategic relationships with hardware suppliers, distributors and clients, to ensure easy servicing.


Study title: European PACS Professional Services Market. Code: B274

...presents an overview of developments in a discussion with European Hospital
Rostislav Kulík, European Hospital’s CR correspondent, discussed the present use of advanced scanners with Jan Beran MD, radiologist at Liberec’s Municipal Hospital and head of the Czech Radiological Society’s Section for Musculoskeletal Radiology

The CR also has multispectral CT scanners, e.g. Sensation 16, which was first presented in 2001 in Chicago. Up to now five of these have been in the CR, with hospitals in Prague, Pardubice and Ostrava all equipped with Sensation 16. These are rather revolutionary devices - Sensation 16 may scan 16 layers in a single period and runs two revolutions per second, allowing examination of 32 slices a second. Such an astounding speed enables physicians to inspect the peripheral circulation and the moving lungs or heart.

Undoubtedly, medical facilities with such modern diagnostic tools won’t have neglected modern communication technologies for data sharing. All major hospitals are more or less involved in a picture archiving and communication system (PACS) network, which will gradually make their best equipped consultation centres and reference libraries for others. Basically, PACS represents a foreseeable course of action for university centres and clinics in major hospitals because these are crucial for information exchange, and modern technologies support. Not to mention that, apart from the initial investment into infrastructure of network in the beginning, image sharing, on-line consultations and telediagnosis in general will help cut future costs, which is absolutely welcome. Lack of finance, cautionary strikes, and delayed payments still constitute the worst nightmare of the CR’s Ministry of Health, so is this a way forward?

I asked Dr Jan Beran what importance he attached to radiology meet- ings. The ECR is undoubtedly very good opportunity for sharing of professional information,’ he pointed out. From my personal point of view, I’d say that refresher courses are of great value, because they are longer seminars where specialists present modern trends - and particularly therapies. Those dealing with radiol- ogy in correlation with anatomical and pathological comments were very valuable. Also, seeing modern radiology equipment at ECR is valu- able, to become acquainted with lat- est technical trends, some still not at our disposal in the CR. Vienna is also close to the Czech Republic, so many of our physicians can attend the event. This year I’ll be a visitor, in 2003 I took part in a Scientific Session, presenting a paper on trau- ma of the cerebral spine in patients suffering akinglyspinaly.

Is the completely digitised hos- pital a goal in the CR?

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*Is the completely digitised hos- pital a goal in the CR?

Do you foresee that using CT for ‘virtual examinations’ could become a standard procedure in the CR?

‘Virtual “anything-scopes” performed by spiral and MD CT are non- invasive methods. Nowadays, our attention is given to virtual colonscopy, to screen for tumour changes in the colon. The use of CT in our everyday development depends not only on radiologists but also on gastroenterol- ogists. The latter are expected to guard against this method - because it can decrease their clients list sig- nificantly. CT angiography (CTA) is a crucial achievement. Using CTA, we can non-invasively visualise not only the aorta but also kidney, limbs, and cardiac arteries. Moreover, all the data generated via CTA are of excellent quality, so this could easily replace conventional angiography. My prediction is that diagnostic angiogra- phy will be performed through CT, and contrasted arteries (PTA, stenting) will be performed angi- graphically.

RADIOLGY / PLANNING

Since 1997, the Austrian Medical Institutions and Major Medical Devices Plan (Österreichische Krankenanstalten- und Großgeräteplan - OKAP/GGP) has been an important instrument for ensuring structural quality in the framework of healthcare reform. The plan, agreed jointly between the national authori- ties and the authorities of federal states, is reviewed and adjusted every two years and is binding for medical institutions that are financed by pub- lic funds. These public and private, non-profit, acute hospitals provide almost 75% of all available Austrian hospital beds. Major medical devices for the university clinics in Vienna, Graz, and Innsbruck (exclusively research hospitals) fall under a differ- ent regulation.

Planning objectives are the maintenance of high quality of care, permanent adaptation to the hospital structure, and increased economic efficiency. IT-supported simulation models with current and prospective data about demographics and local area developments, medical and local medical technological developments, length of stay, and patient load (espe- cially taking into account accessibility, area served, treatments offered, and minimum department size) - all serve as the basis for planning. Projects intended by each individual hospital are included.

The regulations of the OKAP apply accordingly to locations - depart- mental structure - bed limits per hos- pital - total bed limits by department for each federal state, by regular care

Major medical device planning. Austria

Austrian Large Medical Device Plan - Planning Guidelines

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<tr>
<th>Device Group/Procedures</th>
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<th>Inhabitant Guidelines</th>
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*Excluding non-SPECT-capturable gamma-cameras

Major European Hospital correspondent Christian Pruszynski examines current hospital planning that also regulates the use of large imaging devices
and intensive care - supraregional capabilities in defined areas. The Plan for Large Medical Devices establishes the nature and number of registered medical/technical large medical devices per hospital (see table). The determinations are based on the hospitals’ departmental structures, and also take into consideration equipment available in hospitals not covered by the plan. Location recommendations are determined by the criterion of economic efficiency, and take into account the cooperation potential of the surrounding area, to avoid parallel installations.

Device-specific recommendations for new or reinvestments, e.g., provide for CT: In general multi-slice CTs, 16 lines for traumatology, neurosurgery, and stroke unit locations.

MRI: For new and replacement investments a field strength of > Tesla is desired. In-house and extra-mural cooperation should be increased, as in the CT area.

Lithotripter: In case of replacement investments, urology x-ray positions should be replaced by lithotripters of the newer generation.

PET: For new or replacement investments, if needed, new technological developments such as PET/CT machines should be taken into consideration.

The implementation of ÖKAP/GGP is scheduled for completion by the end of 2004 and is on track, as Dr. Michaela Moritz, managing director of the Austrian Federal Health Institute (Österreichisches Bundesinstitut für Gesundheitswesen - ÖBIG) – which is in charge of setting up the ÖKAP (see box) – emphasised in a discussion with EH. Currently, ÖBIG is developing a follow-on plan that should be in effect by 2010, and which focuses on the transition from a traditional bed planning to capacity-oriented planning that covers frequency of stay, length of hospitalisation, and performance per treatment unit. The so-called ‘detailed range of services planning’ encompasses selected service areas whose costly infrastructure makes it unreasonable to locate them everywhere. Already planned are cancer services, stem cell transplants, nuclear medicine, physical therapy wards, heart surgery, paediatric cardiology, liver transplants, stroke units, haemodialysis centres, heart catheterisation laboratories, and radiation therapy. Infrastructure quality criteria are fully integrated into this planning and contain department specific production spectra and different new organisation forms of in-house treatment using day clinics.

The collected data follow international comparison standards. Currently nobody can tell if and when in view of the EU enlargement – after all, Austria borders on the new EU member states – the Czech Republic, Slovakia, Slovenia, and Hungary - cross-border components will flow into the planning. The health systems of these countries are simply too different. Dr. Moritz refers to them as ‘delicate plants’ that are just beginning to sprout. Perhaps this foretells another ‘Prague Springtime’.

In 1973, the Ministry of Health founded the Austrian Federal Institute for Public Health (ÖBIG). An independent scientific institute, the institute is a legal entity governed by private law. At present ÖBIG has 80 employees. About 50% of the institute’s income is generated by health planning, but ÖBIG also oversees nine other important areas, e.g. care of the elderly, health occupations and professions, health economics, public health, and the environment. As a scientific service provider the institute is available to everybody and counts federal and state authorities, hospitals, public and private insurance companies, and pharmaceutical companies among its customers. ÖBIG also participates in numerous national and international health planning boards.

Electronic blind man’s cane
New technology helps blind people recognize obstacles

Electronically controlled canes warn blind people of obstacles which cannot be detected with the traditional cane. According to the health magazine “Apotheken Umschau” laser and ultrasound technology is being used to chart the area around the blind person — up to his head. The obstacles are reported to the carrier via a vibrating device. Open boot lids reaching onto the pavement, chest-high barriers or similar obstacles which up-to-now presented a dangerous source of injury won’t be a problem any longer for the users of the new cane technology.

Contact: pirhalla@wortundbildverlag.de

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Visit us at ECR booth #210
MRI for cardiac catheterisation of young patients

Six in 1,000 babies suffer congenital heart disease. Cardiac catheterisation is used for diagnosis and surgical planning, but this means exposure to potentially dangerous radiation levels during x-rays. The risk of developing a solid cancer tumour after x-ray guided cardiac catheterisation is 1 in 2,500 for an adult (source: UK National Radiological Protection Board) and that risk increases to 1 in 1,000 for a five-year-old - the younger the child, the greater the risk. Additionally, because a significant number of children with congenital heart disease undergo repeated x-ray guided catheterisations, the risk is probably multiplied.

Now a new technique, using magnetic resonance imaging (MRI) rather than x-ray, to diagnose/treat children with congenital cardiac abnormalities has been developed by teams led by Dr Reza Razavi, Director of Cardiac MRI at Guy's and St Thomas' School of Medicine, King's College London.

Perfoming cardiac catheterisation under MR guidance allows greater access to physiological and anatomical information. We were able to successfully visualise and manipulate catheters under MR guidance in nearly all the patients. In some of the patients the whole procedure was done without using any x-ray radiation, thus demonstrating for the first time that it is possible to perform diagnostic cardiac catheterisation entirely under MR guidance.1

Derek Hill added: ‘MRI gives us fantastic pictures of the heart but it is only now that we can use it in real time during interventions. We've shown that MRI can replace x-ray imaging in assessing and treating children with heart defects, and we believe this will soon be extended to adults with heart rhythm abnormalities and coronary artery disease.’

This year, Guy’s and St Thomas’ Hospital NHS Trust also plans to have an equivalent treatment facility to continue its work at the St Thomas’ site, which will be permanently or temporarily and, in particular, isolated from ultrasound experts. The team also plans to have an equivalent treatment facility to continue the pioneering MRI work.

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Studies have shown the potential use of echography, or ultrasound (US), scans to perform quick and efficient diagnoses for many types of pathologies. But these examinations are only performed by specialists in the main hospitals or private clinics, etc. - and ultrasound experts are also scarce. Developments in tele-radiology, using robotic assistance, can not only educate, but also save lives.

Using Eurosat satellite links, on 5 November 2003, a robotic tele-echography live demonstration was performed between Tours, Barcelona and Nicosia, Cyprus - one of the European Community newcomers. The live worldwide premiere demonstration was performed within the framework of the OTELO EC-funded project, by nine partners from five countries: France, Italy, Spain, the UK and Greece.

OTELO is a fully integrated end-to-end mobile tele-echography system dedicated to population groups isolated from medical facilities, either temporarily or permanently and, in particular, isolated from ultrasound experts. The system offers an alternative to medical centres that lack ultrasound specialists in-house.

A portable, ultrasound probe holder, robotic system, state-of-the-art technologies to reproduce an expert's hand movements to perform an ultrasound examination through a distance away. Although held by a non-specialised paramedic on the remote site, the robotic system sends a real time, quality ultrasound image back to the expert for diagnosis.

During the demonstration, the patient was in the Nicosia General Hospital in Cyprus. The robotic system, holding a standard ultrasound probe, was positioned next to the patient and maintained there by a paramedic assistant, Dr C Tsikatazi from the hospital. The live demonstration ran in two phases.

During the first, Dr Tsikatazi followed instructions given by ultrasound specialist Dr Conxita Bru, located in the Corporacio Santarera Clinica, Barcelona, for the positioning of the robot on the patient. Then Dr Bru remotely controlled the robot, scanned the patient as if next to her. Using ISDN line connectivity with 384kb/s bandwidth, he carried out the first successful diagnosis of several abdominal organs.

During the second phase of the tele-echography demonstration, a satellite connection was established using Eurosat with a 512 kbit/s bandwidth. This linked Nicosia and Tours, France.

This time, Dr Tsikatazi was the remote assistant to Professor Artelle, who originated the tele-echography concept in 1990, and who was located at the University Hospital of Tours. Ultrasound investigations were successfully performed on both kidneys with the robot.

The expert centres and the patient centre were all equipped with a 384 kbit/s videoconference system, allowing conversational and information exchange similarly made during a normal echography procedure.

The tele-echography examinations took no longer than a normal ultrasound scan performed next to the patient, and underlined the feasibility and reliability of this new tele-echography concept. Report by Pierre Vieyres, Assoc. Prof, Project Manager at the Laboratoire Vision et Robotique (LVR), Universite d’Orleans, France. (Details: Pierre.Vieyres@bourges.univ-orleans.fr)
Dynamic MRI helps predict memory loss

USA - Magnetic resonance imaging (MRI) has been used for the first time to study subtle changes in a specific area of the brain, and researchers believe this could help to predict future cognitive or memory decline in healthy adults.

Using MRI to predict the conversion from normal thought process to a condition referred to as mild cognitive impairment, Henry Rusineck, Associate Professor of Radiology at New York University School of Medicine said: "We identified progressive brain atrophy as predictive of future cognitive decline among healthy elderly patients. We have also shown that looking at the medial temporal lobe, a specific, relatively small brain region, was much more informative than looking at the whole brain. (The medial temporal lobe is a region near the middle of the brain that includes areas critical to forming new memories)."

45 healthy patients aged 60+ were studied to determine if a medial temporal lobe atrophy rate predicted future memory decline. The patients underwent MRI scans and neurological tests at the beginning of the study and had two or more follow-up examinations over a six-year period. Images and test results were compared and assessed for changes over time.

Of the 45 patients, 13 (29%) demonstrated cognitive decline. Medial temporal lobe atrophy rate was the most significant predictor of decline with overall accuracy of 89%.

'This study uses a novel approach to examine longitudinal changes in the brain, which are less subject to bias than existing approaches and are highly reproducible,' said co-author Mony J de Leon, Ed.D, Professor of Psychiatry and director of the Centre for Brain Health at NYU School of Medicine.

The first signs of memory loss are usually diagnosed as mild cognitive impairment. People with mild cognitive impairment decline to dementia at a rate of 10-15% annually, compared with 2-4% among healthy elderly individuals. Accurate and early recognition of changes in the atrophy rate could enable therapy, as well as better tracking of the progression of dementia.

'I do not believe serious memory loss is a natural consequence of ageing. A significant number of elderly people see are very sharp and creative,' Dr Rusineck said. He advises those at risk for memory decline to exercise the brain as well as the body.


Regional Brain Atrophy Rate Predicts Future Cognitive Decline. Henry, Rusineck; Mony J de Leon EdD; S DeSanti PhD; D Frid BS; W-H Tsui, MS; C Yi Zartash ABD; and A Conceit MD. (http://radiology.rsna.org)

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Whole body MRI - the diagnostic work-up

By doctors Harald Kramer, Stefan Schoenberg, Andreas Wieser, and Maximilian Reiser, Institute of Clinical Radiology, Ludwig-Maximilians-University, Munich, Germany

In Europe and North America cardiovascular diseases still rank number one in terms of morbidity and mortality. The most critical manifestations are carotid artery stenosis, coronary artery disease or renal artery stenosis with the potentially fatal consequences of stroke, myocardial infarction or renovascular hypertension. In the mortality statistics several malignant diseases, predominantly lung cancer and colon cancer, rank number two, directly behind cardiovascular disease.

Due to the lack of ionising radiation, magnetic resonance imaging (MRI) holds high potential for screening of these diseases. Other advantages of MRI include the excellence of tissue contrast as well as the ability to image both morphology and function.

worked on combining a whole body MRI protocol including cardiovascular screening as well as screening for malignant disease. What all these protocols have in common is that dedicated rolling platform systems were used so as not to reposition a patient during the scan, and to cover the entire body within a short scan time combined with fast imaging. However, this approach needs compromises in terms of spatial and temporal resolution for the different organ systems.

The goal of the latest developments in MRI was to integrate parallel acquisition techniques (iPAT) into a comprehensive whole body protocol, in order to image all relevant organ systems with comparable image quality as in standard, state-of-the-art MR imaging with no comprom-

Figure 1: TIM (total imaging matrix) concept. 76 radiofrequency receiver coils in combination with integrated parallel acquisition techniques (iPAT) in all 3 directions allow fast high-resolution imaging of the entire body.

At this point, MRI has already gained a leading role in the diagnostic workup of several organ systems including MR angiography of the carotid arteries, renal arteries and peripheral arteries. In addition, MRI already is considered a new gold standard for assessment of cardiac function. Moreover, MRI is highly valuable for the functional assessment of significant coronary artery disease, using perfusion imaging. Up to now, the assessment of these organ systems by MRI is complex and time consuming. Due to the fundamentally different requirements for the different organ systems in coil set-up, slice positioning as well as contrast media application, it was not possible to integrate the state-of-art evaluation of different organ systems into one whole-body scan.

Several groups have already worked on combining a whole body MRI protocol including cardiovascular screening as well as screening for malignant disease. What all these protocols have in common is that dedicated rolling platform systems were used so as not to reposition a patient during the scan, and to cover the entire body within a short scan time combined with fast imaging. However, this approach needs compromises in terms of spatial and temporal resolution for the different organ systems.

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of the future?

flexibility in whole body parallel imaging (total imaging matrix, TIM; figure 1), it is now possible to image the whole cardiovascular system, together with imaging of the lungs, brain and abdomen, as a screening examination of the whole body. This allows a search for metastases in malignant disease within less than 60 minutes. The system is equipped with 32 independent receiver channels and with simultaneous connection of 76 array coil elements (matrix coils) for complete head-to-toe coverage. All matrix coils are designed for parallel imaging in all 3 directions. The total scan range for this system is 205 cm, obviating the need for any patient repositioning during the entire examination. Latest studies have shown, that at present dual modality PET/CT imaging has a higher accuracy in staging metastases of known malignancies than whole-body CT and MRI. In detecting metastases, MRI has the same accuracy than PET/CT. In the near future, these conditions will probably change in favour of MRI, due to higher accuracy by means of higher spatial resolution using new acquisition techniques (figure 3). The advantages of MRI nowadays are the lack of ionising radiation and ultimately lower costs. Already at this point, whole-body MRI is superior to scintigraphy for the detection of bone metastasis and by far exceeds the performance of conventional X-ray imaging for the assessment of osseous lesions in the patients with plasmocytoma.

Screening for cardiovascular disease is another application of whole-body-imaging. Here it is most important to perform imaging at the highest possible quality with the lowest effects to the patients body. The advantage of MRI in this sector is that there is no effect on the patients body like ionising radiation and only a little amount of a well tolerated contrast agent not containing iodine is used. Compared with current gold standard screening examinations like ECG, Ultrasound and X-ray, MRI is an effective method for the detection of pulmonary nodules. The researchers found 195 >=3mm-uncalcified nodules in the 20 CT scans. Areas under the FROC curves were 0.54, 0.48, 0.55, and 0.36 for CAD and readers 1, 2, and 3, respectively. The difference between reader 3 and CAD, reader 1 and reader 2 was significant (p<0.05). CAD, reader 1 and reader 2 were not significantly different. Mean sensitivity of the readers was 50% (range 41-69%). Double reading increased sensitivity to a mean of 68% (range 56-74%). CAD performing at a threshold that allowed only 3 FP-detections per CT scan increased mean sensitivity to 80% (range 78-84%). CAD complemented individual readers by detecting additional nodules more effectively than other readers (CAD-reader pair weighted kappas significantly less than reader-reader weighted kappas using Wilcoxon Rank Sum Test, p=0.05).

Conclusion: CAD performing at a level that allows only 3 FP-detections per CT scan appears to detect significantly different nodules than readers, resulting in substantially higher sensitivities for CAD-assisted readings than when two readers independent interpretations are combined as a double reading. Nodules identified by CAD are significantly different from those detected by readers.

* Co-authors: David Paik PhD, Anthony Sheehy MD, David Nadich MD, and Sandy Napel PhD

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Higher sensivities in CAD-assisted readings

Findings from research on the impact of computer-assisted detection (CAD) algorithm v. a second radiologist on reader sensitivity for detecting pulmonary nodules in MDCT scans, presented at November’s Radiological Society of North America (RSNA) meeting by Geoffrey Rubin MD, John Lyo MD, and team*, working in the Department of Radiology, Stanford University, Calif.
Swiss researchers are partnering the latest in radiological imaging technology with forensic science to provide a bloodless, non-invasive virtual autopsy method.

A goal of forensic medicine is to document the findings of interest to physicians, coroners, pathologists, forensic scientists, and medical examiners. Therefore, in addition to classical methods, scientific cutting-edge technologies are used. Virtual autopsy, the registered name for the Swiss Virtual Autopsy approach, is a research project initiated and managed by Professor Richard Dirnhofer, director of the Institute of Forensic Medicine at the University of Berne, Switzerland. The study is carried out in strong collaboration with the Institute of Diagnostic Radiology of the University of Bern (Director: Professor Peter Vock). In the past three years, the University of Bern’s Institute of Forensic Medicine has performed 100 virtual autopsies, and over the years, Virtopsy has developed a transdisciplinary and international dimension with worldwide collaborations in many medical disciplines (see www.virtopsy.com).

Virtual autopsy combines computer tomography (CT) and magnetic resonance imaging (MRI). CT images provide information about the general pathology and trauma injuries of the body. The multi-detector CT scanning is used like a body screening tool to locate the relevant forensic findings. Then MRI is used in those areas of interest to document the findings of soft tissue, muscles and organs in a higher tissue resolution. To determine the time of death, Virtopsy uses MRI spectroscopy - a technique that measures metabolites in the brain emerging during post-mortem decomposition.

PD Dr med. Michael Thali, a board-certified forensic doctor, who also has specialized training in radiology and is the research project manager for Virtopsy at Berne University explained: “The virtual autopsy does not destroy key forensic evidence – which may be damaged during a classical autopsy. It can also be used in cultures and situations where autopsy is not tolerated by religions, such as orthodox Judaism, or is rejected by family members. Some people do not like the idea of a classical autopsy.”

In addition to those radiological internal body documentation tools, optical 3D body surface scanning - a technique first used by the auto industry to develop and analyse auto parts - is used to store so-called patterned injuries on the skin of a victim. Using a computer-aided design programme, investigators can then compare the virtual model of the injury with the suspected injury-causing instrument in 3D on the computer.

“Finally it is possible to merge all of this information from the body’s inside and outside into one data set on the computer,” Michael Thali said. ‘We now have 3D, non-subjective information that can easily be analysed and presented in court - without showing graphic, horrible images that may shock people.’ The new, combined method of merging 3D body surface and radiology data sets creates the potential to perform many kinds of reconstructions and post-processing of (patterned) injuries in the realm of forensic medical case work. ‘The combination of the methods of 3D body surface documentation and radiology has the advantage of being observer-independent, non-subjective, non-invasive, digitally storable over years or decades and even transferable over the web for second opinion. The rapid development of radiological and imaging methods will lead to new horizons in the 3D documentation and forensic examination of dead and living people,’ he added.

It may be some years before all necessary research in the Virtopsy project is done and this method is fully accepted,” said Prof. Dirnhofer and Dr Thali. ‘But we believe “Forensic Imaging” will be a new and exciting science in the future.’

A future science

Forensic imaging

Aloka Company Ltd, one of the world’s oldest ultrasound manufacturers, has agreed that Hologic Inc, a leading US developer, manufacturer and supplier of medical imaging systems, will have exclusive distribution rights in the US for Aloka’s ultrasound products, customised to Hologic’s specifications, for an initial term of three years, with automatic one-year renewal options.

Aloka (worldwide revenues c. $440 million) manufactures for Hologic, under a joint label, a high-performance, fully functional, diagnostic ultrasound system optimised for women’s imaging, with emphasis on finding and diagnosing abnormalities within the breast. Hologic’s exclusive distribution rights extend to radiologist-based sales where breast-imaging systems are highly utilised and, in addition to the ultrasound system, include compatible, optional components and future technological enhancements and upgrades.

The system has been designed to incorporate Aloka’s proprietary ProSound package of features including: Digital Pure Beam imaging, Tissue Harmonic Echo technologies, 3D Colour Doppler capabilities, a 12-bit AD converter to enable higher contrast resolution, and an integrated DICOM compatible image management solution.

Jack Cumming, Hologic’s Chairman and CEO, said: ‘Our selection of Aloka was based on a thorough evaluation of available ultrasound technologies. Our system specifications focused on the highest image quality, a versatile feature set, simplicity of use for technologists and physicians, and affordable pricing for women’s imaging suites that are suffering from overall cost pressures. We believe the system we have customised with Aloka for breast imaging is an elegant one, which eclipses all our selection criteria.’

Hologic’s products include the Lorn Selenia, the industry’s only full-field, digital mammography system using direct capture technology and the MIV and Affinity Series of screen-film mammography systems. The company also provides both upright and prone stereotactic breast biopsy systems. Additionally, a distribution agreement with R2 Technology allows the company to offer a range of Computer Aided Detection products for use with their mammography systems.

Customised US for breast imaging

Aloka’s high-end ultrasound system

Left: Detailed visualisation of MR image makes a precise verification of bullet track within the cerebellum possible
Right: Searching the bullet track at autopsy traditionally, using a probe, is even more difficult
New 32-slice system and an award for 16-slice CT scanner

Siemens has introduced the world’s first 64 slice computed tomography system (CT). Named Somatom Sensation 4 slice, the system is based on Speed4D technology utilising the powerful Straton X-ray tube as a core element. After a comprehensive clinical testing phase, the firm reports that the system will replace the 16-slice CT as Siemens top model (from autumn 2004).

64-slice CT system operates at 0.37 seconds per rotation

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Siemens Medical Solutions that help
Cell-based assay to detect cancer

The Pennsylvania-based firm Immunicon has raised $25 million to fund commercialisation of its cell-based and molecular diagnostic cancer monitoring products and to develop products for indications of cancer beyond a cancer site, to decide if patients have some feature that can predict whether therapy is adequate or not. 'I think this is something that should be done prospectively. It's an important marker to decide which is the appropriate treatment for a patient - and this is what the company will pursue in the near future.'

Following a study first published in the Proceedings of the National Academy of Sciences in April 1998, which showed that circulating tumour cells were significant for disease and had predictive and prognostic value, a cell-based assay, using immunomagnetic enrichment to detect epithelial cells of solid tumours, was developed then tested in clinical trials, across the US, in 180 women with metastatic breast cancer.

By Karen Dente

Dr Massimo Cristofanelli, who conducted the trial at the M.D. Anderson Centre, Texas, said he wanted to see if minimal disease in patients with metastatic breast cancer could be detected. 'The idea originated in Europe,' he explained. 'They were looking at tumour cells found in bone marrow aspirations (performed during surgery) that showed minimal cytokine positive cells - which had prognostic implications.' Again, the idea was to find these cells whose collection would be easier and it was thought that blood could be screened for circulating tumour cells, providing a good source of cancer cells from which to collect biological data. The outcome of the trial showed that the screening test helped predict a patient's response to treatment after four weeks. 'This is important in stratification: you can tailor treatment by looking at those who will respond and those who will not,' Dr Cristofanelli pointed out.

Another implication is in prognosis patients with no secreting cells have longer survival compared with those who have a viable number of these cells. 'Essentially, the implication for those patients is that you must use more aggressive treatment in one group - or whether to give treatment to those who have a bad prognosis all,' Dr Cristofanelli said.

Currendy there is considerable discussion about the treatment strategy for patients with metastatic breast cancer - the question being: Is single-agent chemotherapy better, and is aggressive strategy valuable or not? In much of the eastern US the less toxic and less aggressive single agent approach is preferred. 'This is not based on any studies and no sites of delivery, and is still a very empirical approach,' said Dr Cristofanelli. Up to now, all the studies carried out have never looked at another valuable such as secreting cells, or the site of the disease, to decide if patients have some feature that can predict whether therapy is adequate or not. 'I think this is something that should be done prospectively. It's an important marker to decide which is the appropriate treatment for a patient - and this is what the company will pursue in the near future.'

Pointing out that immunomagnetic enrichment has been known for several hundred years, Dr Gerald Doyle DDS, MS, Director of Clinical Research at Immunicon Corp said this approach can detect iron oxide particles encased in protein to which antibodies are bound, and he believes this type of testing makes today's staging of the disease obsolete. 'Thirty percent who would not be diagnosed as having cancer according to today's standard guidelines would be diagnosed with cancer if using these cell-based screening assays that can detect circulating tumour cells very easily on,' he said. Dual Tumor Carcinoma in Situ (DCIS is considered a non-invasive stage) can be measured. Beyond monitoring disease, predicting outcome and tailoring treatment, he also sees the assay as useful in screening for the disease.

'The mammogram still remains the gold standard for early diagnosis of breast cancer,' said Dr Cristofanelli, adding: 'Screening for cells is still a far away modality to be used in patients, but this is where we should go, if we can prove cells in early disease, maybe in stage 2 and stage 3 disease.' The test could also be used in other types of cancer, e.g. colorectal.

By Karen Dente

Indian firm steps into France

India's biggest pharmaceutical company - Ranbaxy Laboratories Limited, which manufactures and markets branded generic pharmaceuticals and active pharmaceutical ingredients - has acquired RPG (Aescultra) SA, France.

As a subsidiary of Ranbaxy, RPG will retain its name, to maintain a strong brand equity and visibility in the French generic market. Ranbaxy reports that it intends to invest additional resources in the French firm and further develop this business in France and UK. The market has an excellent growth potential, Ranbaxy adds. 'This completes a further step in the expansion plans we have for Ranbaxy in Europe,' Dr Brian W. Tempest, Joint Managing Director and CEO designate of Ranbaxy, pointed out, following the acquisition of RPG.

Ranbaxy also reports that its continued focus on R&D has resulted in several approvals in developed markets and significant progress in new drug discovery research.

NEW Safety system for ELISA assays

False negative results can result if (accidentally) serum is not added to a sample but that sample is tested as if it had been. Given demands for high turnover plus automation, such errors can occur - with inevitably serious outcomes. To avoid the problem, Aesku Diagnostics recently launched SACS, a sample and assay check system for use with all CE-marked kits in the firm's Aeskulisa product range. Using SACS, when a serum sample is added to the sample buffer during pre-dilution, within minutes the colour of the buffer changes from bright yellow to an intensified yellow, and this is photometrically measured. Clearly, if no change has occurred, the serum has been accidently omitted.

The firm points out that SACS is the world's first check system for serum sample pre-dilution in autoimmune diagnostics.
Pain treatments

Recommendations for pain therapy with drugs for tumour pain, develop
ted by the Expert Committee on Cancer Pain of the World Health Organisation (WHO), are now also used for patients whose chronic pain is not caused by tumours. The WHO recommends oral administration of drugs based on a strict timetable to ensure a constant level of drugs in the blood. Strong pain is treated with strong drugs such as opioid analgesics. Morphine is the prototype of opioid analgesics, and is still regarded as gold standard tumour pain treatment. However, newer drugs such as oxycodone, which is used as a short-term solution, and fentanyl, oxycodone, achieve the same effect with a lower dose for the treatment of less acute pain. These drugs are particularly suitable for older patients who often suffer several age-related complaints. Modern opioid analgesics (e.g. oxycodone) are also increasingly used to treat non-
tumour based pain, such as pain on movement or neuropathic pain. They are highly effective, well tolerated and are available as so-called retard

- drugs that release active substances over a longer period of time. These analgesics enable effective pain control and achieve a balance between minimum pain alleviation and highest possible activity for the patient. This means that patients can break free from the vicious circle of pain, actively support their recovery process and take up normal daily life. When interventional methods of pain relief are used, nerve structures are either temporarily numbed through local painkillers or are elimi

- nated permanently, for example through surgical intervention on nerves. An injection of painkilling drugs into the spinal cord is one such treatment. The physiotherapeutic use of treat

- ment comprise relaxation methods such as autogenous training, progres

- sive muscle relaxation, learning to cope with stress and biofeedback

- treatment. A psychological evaluation has to be carried out at an early stage so that the cause of pain can be established early on. In addition to physical and psychological aspects of the pain. In a physiotherapeutic approach, physical therapy (e.g. physiotherapy, massage, heat or cold therapy and transcutaneous electrical nerve stimulation (TENS)) is an additional treatment alternative. Alternative methods of pain treat

- ment, such as traditional Chinese medicine (acupuncture), aroma therapy and homeopathy are also increasingly used.

Methods and Instruments - Since 2000, the nursing research group at the Department of Nursing Science, Humboldt University, Berlin, has been regularly being carried out by scientists of nursing of the Charite University of Medicine, Berlin. It is mainly a descriptive study. Its longitudinal section results are supported by the fact that similar questionnaires have taken part for several years already. The data were gathered by trained nursing personnel by means of qualifying date surveys of patients and residents who gave their informed consent. Standardised questionnaires gath

- ering patient relevant data (age, sex, height, medical diagnoses, etc.) as well as in-house risk scales, stan
dards and guidelines were used as measuring instruments. Further

- more, it was possible to establish the interventions that were carried out and measured for use against patient prevention and therapy. Another essential aspect was patient assessment relevant to pressure ulcer risk. The Braden scale was a favourite instrument, having been filled in at the ‘patient’s bedside’ in a transparent design. It was divided into various phases was carried out on the basis of national and interna

- tional recommendations. Additionally, standardised questionnaires referred to fall events and the assessment of the patient’s current state of care dependency. In spring 2003, 45 nursing homes and 47 hospitals took part in the sur

- vey, which meant there was an increased number of participating nursing homes in particular com

- pared with the previous year (table 1). Therefore, the desired data compa

- rison of nursing homes and hospi

- tals could be achieved in a more accurate way by the better bal

- ance of participants. 13,002 questionnaires were evalu

- ated (75% nursing home residents and 9503 hospital patients). So the response was 76.6%. It was estab

- lished that there was a larger share of females as well as a higher aver

- age of female patients and resi

- dents (nursing home +11 years, hospi

- tals +3.5 years). By establishing the ICD-10-Codes main diagnoses concerning circula

- tory diseases (20.7%) and new for

- mations (15.3%) were made possible in the clinical field. Treatment was mainly carried out on wards for internal medicine (36.6%) and surgery (30.8%) (diagram 1). Additionally, standards showed a higher average care dependency of female and male nursing home resi

- dents compared with hospital patients. Additionally, distinct rela

- tions were discovered between care dependency and the prevalence of pressure ulcer. The higher the care dependency the more often one or more cases of pressure ulcer were diagnosed. It was also established that, on average, patients with pres

- sure ulcer were older than those without. A risk assessment was carried out by applying the Braden-Scale. It helped identifying 35% of persons at risk in hospitals and 60% in nursing homes. Nevertheless, pressure ulcer prevalence in nursing homes was 12.5% compared with 24.2% in hospi

- tals, but more than 50% of pres

- sure ulcers developed on site. It has to be noted that more than half of the pressure ulcer patients were bed

- ded on ‘normal’ mattresses without special padding. Nursing homes used fleece bedding for prevention and therapy in almost 50% of the cases whereas hospitals only used them in 10% of the cases. Hospitals also used a greater variety of wound dressings, however, they did not apply them as frequently as the nursing homes did. Another important aspect of the prevalence survey was the examina

- tion of fall events. Especially loca

- tions and consequences of falls were investigated. 124 of all persons who fell (1938) did this whilst being in either a hospital (270) or a nursing home (454). 8.4% of severe conse

- quences such as bone or joint frac

- tures were established in hospitals and 23.2% in nursing homes. Unfortunately, it was revealed in this connection that standards and guidelines of fall prevention were almost non-existent. Incontinence was included in the study. A significant difference
automatically lead to a change in structures. However, the objective of the pilot project ‘Pain-free hospital’ is to establish interdisciplinary pain management for doctors, nurses and patients in Germany. The project is supported by the pharmaceutical firm Mundipharma, of Limburg, and the German Association for Interdisciplinary Medicine (DGKIM).

During the pilot phase the project will initially be limited to five hospitals with 400 - 1000 beds each (no accident or special clinics) chosen by the team of experts - applications are still being evaluated. Following the concept ‘Keep it short and simple’, results from three clinics will be evaluated in the autumn. Following an as-is analysis, via questionnaire, on the status of pain therapy in the hospitals, the team will make recommendations for changes. The objective is to implement improvements to pain therapy with the least possible cost and energy and to ensure that the hospital receives a quality accreditation. This is in accordance with DRGs that require trouble-free and cost-effective treatment processes in classical medicine. Apart from the obvious advantages of successful pain management for patients, further benefits include cost saving through quicker recoveries and shorter hospital stays.

Interdisciplinary, multi-professionalism and team thinking will be success factors in the future, and pain therapy is a classic example for this.

Following a discussion on this subject by Mundipharma GmbH at MEDICA, I spoke with the nursing scientist Professor Jurgen Osterbrink, head of the Centre for Nursing Studies, Nuremberg, who told me that in the USA $90 billion are spent on pain therapy and 90% of patients suffer from back pain and they cause 80% of the costs. I then asked what influence the pharmaceutical company would have on the pilot project. They have no influence on the choice of drugs. They only support this project on the subject of freedom from pain.

One of the main problems with managing pain in hospitals, he said, is that, ‘There is not enough experience in the treatment of pain. There is a lot of prejudice against morphine, for instance, but suffering from too much pain can cause other illnesses as well.’ He pointed out that recent findings include; ‘...the combination of drug and non-drug therapy in treating post-operative pain, which is often not treated sufficiently - an individualised therapy. You have to differentiate pain. There are different types and intensities, which every patient reacts to in a different way. Sometimes a simple distraction, through music with headphones or breathing techniques, can alleviate pain.’

Professor Osterbrink - as Head of the Advisory Board Nursing, Head of the Centre of Nursing Studies, Klinikum Nuremberg, Guest Prof. University Witten-Herdecke, Associate Professor Florida International University, Miami, USA - brings a wealth of experience to the advisory board, which should bring us closer to better pain management.

Contact: juliane.eichhorn@charite.de
When Eberhard Klaschik became the Sackler Professor for Palliative Medicine at the University of Bonn (details box: page 13), he was the first person in Germany to take such a role. In 2003, a second professorship in palliative medicine was set up at the University Hospital in Aachen. ‘Palliative medicine is a specialist field that deals with terminally ill patients or those with a very limited lifespan’, Professor Klaschik explained. ‘In recent years, in Germany, palliative care has been not only to act in the final stage of life but also to intervene far earlier and offer help. For many terminally ill patients, this means extensive assistance in coping with their lives.

This type of care also has become more established in paediatrics, geriatrics, and for neurological diseases. So patients whose life expectancy is likely to be a little longer than that of the typical palliative patient can also receive palliative care, with comprehensive treatment that takes their physical, psychological, mental, and social problems into account.’

As a senior consultant in anaesthesiology, intensive medicine, and pain therapy, his own background presents a clear advantage in this work, but the professor points out that any qualified doctor can specialise in palliative care.

‘You have to be able to examine therapies available for patients’ physical symptoms, for example pain, shortness of breath, and changes in the gastrointestinal tract, but you also need to look at psychological problems that may be present. You may be dealing with people who have very existential problems.

You must also ask ethical questions - How do I deal with a patient who demands death? How can I turn a desire for euthanasia into a desire to receive help to cope with life? In other words, palliative medicine is against active euthanasia. However, we do allow patients to die. The difference in our work lies between accepting death as the conclusion of a natural process and intervening and ending lives early.

But what about today’s many ‘death delaying’ therapies that hinder nature from taking its course? If possible, shouldn’t patients have a chance to decide about the natural progression towards his/her death? ’

‘This is a problem in intensive care medicine. Doctors reach a point where they must decide whether certain, life-sustaining therapies should be used - or not. Active, passive and indirect euthanasia are terms that tend to be confused in Germany. ‘Active euthanasia means consciously carrying out a procedure that will result in a person’s death. Passive euthanasia is different. Once a patient has started the process of dying, any therapeutic measures applied would delay death. The ethical and legal situation here is that we would not carry out non-sensical measures. The third concept is indirect euthanasia. A doctor wants to ease a patient’s suffering and may choose a therapy that unintentionally leads to that patient’s earlier death. This situation is difficult to gauge and can only really be assessed by the doctor involved - he/she is the only person who knows whether a therapy was only intended to ease the patient’s suffering or whether he/she thought of taking this a step further. All we can see, on the outside, is that the patient died. This indirect type of euthanasia is legitimate within our ethical obligation to ease suffering - and it’s now legal in some countries.

In recent years, Belgium and the Netherlands have legalised ‘implementation of life-ending measures’. Given that certain criteria are met, this allows active euthanasia - which only qualified doctors can carry out. ’

‘This places completely new obligations on doctors,’ the professor stressed. ‘Actively ending life has never been a doctor’s task. They are primarily committed to life, to easing suffering and to accompanying the dying throughout that process. That’s why I believe active euthanasia should not be done to doctors. Perhaps a new type of job will be created. In countries using the death penalty, the killing is not done by doctors, but by a professional killer. So, here’s the question: Who should carry out a life-ending measure, or if you like, the murder of a human being? Personally, as an independent person with ethical standards, and as a doctor, I cannot accept that I should have to kill.

‘Great Britain and France do not allow active euthanasia, nor does Germany, where I think Kant’s declaration about the dignity of man plays an important role, and that man’s autonomy must not go as far as demanding of others that they end lives.

Switzerland leans towards legalising euthanasia, but the Swiss prefer assisted suicide, which does not have to involve a doctor. A patient takes part in an euthanasia programme, receives appropriate instructions, and a ‘dying companion’ becomes part of the process, to accompany the patient all the way, after he/she has obtained a drug from a pharmacy that will lead to death.

How important is the family’s role in palliative care? ‘Very. The level of social integration is one of the most important factors in people’s decision on whether they want to carry on living. Some time ago, following a screening of a film on active euthanasia, I was a telephone expert for viewers to ring from all over the country. The most disturbing thing I found was that people who said they no longer wished to live had already died a social death - they were completely
isolated, no longer surrounded by others, had nobody to communi-
icate with and so they saw no point in living. One of our most impor-
tant social objectives is not to let people die alone, and to accept
physical changes and never to question a person’s dignity.

In the Netherlands, Euthanasia reveals the reasons why people request active eutha-
nasia. Among the ten most common
reasons, the top two are unbearable suffering, already exist-
ing, unbearable suffering, or the fear of suffering becoming worse.
The second set includes fear of pain and of physical changes, and the
third set includes loss of self-determination, autonomy and dig-
nity. These three sets show the most common reasons for people
wanting active euthanasia. It is up to all of us to help dispel fear and
case suffering.

At what stage does a palliative care expert become involved in care?

We need to look at two different types of organisation. On the one
hand there is interdisciplinary cooperation, where a colleague
realises he can no longer achieve anything and he talks with his spe-
cialist knowledge and the types of therapy available to him. This
may, for instance, involve a haemathera-
pist, who cannot sufficiently con-
trol a patient’s pain levels. So he may
seek the advice of a palliative spe-
cialist. There is no set stage for this
to be done; in fact, sometimes a
link with a palliative specialist may
only be temporary, because then
the therapist may feel in con-
trol again. We have some cancer
patients who suffer excruciating
pains, but once we have managed
to control these to the extent
that suffering are they are happy
to be referred back to an oncological care. All this is based
on good interdisciplinary coopera-
tion. On the other hand, we need
to look at where palliative medi-
cine is put into practice. In our
opinion it should be carried out for outpatient as well as inpa-
tient. For outpatients the general
practitioner (GP) should be the
first point of contact.

We need to think of the following ideas:
- How wide are the options of a GP,
can they do more than usual?
- Also, other colleagues, e.g. house
physicians; who can they speak to?

For inpatients we have specialist palliative wards in hospitals and hospices. We also
have palliative-medical counselling services in hospitals, whereby anybody
can make this house call. And then we have palliative experts, who then visit a patient
in the ward and try to achieve the best possible symptom
control.

How do medical insurers react to this
care?

‘Ah, quite a touchy subject! Apart
from a few pilot projects there is
no system of financing for the
outpatient sector in Germany. When the DRGs where
introduced, palliative medicine was not part of planning, so at
present we are definitely in the red. However, our hospital
providers consider palliative medi-
cine so important that we can con-
tinue our work. We have lodged
our concerns with all appropriate
decision makers. We are not regu-
lated through the DRGs in 2004,
and if we don’t manage to organ-
sie this before 2005, palliative medicine will face hard times. We
must not let that happen.

Financing is a problem, across
Europe. The Dutch invest quite a
lot in palliative medicine. France
now has a law stipulating that
investments must be made in this
field. The British have their own
system through the National
Health Service (NHS) but that only
covers part of the costs. A top-up
comes from very generous dona-
tions - which would be unthinkable
in Germany. The Austrians have
made considerable progress, con-
sidering developments in palliative
medicine started rather late there.
Palliative medicine is now part of
the hospital requirements plan -
which is to establish 50 hospital
beds per 1,000,000 inhabitants for
palliative care by the year 2005.

This corresponds with the situation
in Great Britain. But, as I’ve said,
the situation in Germany is not as
good.
Prostate cancer - one of the most serious malignant diseases affecting men - has a significant correlation with age but also affects younger patients. In the absence of family history of the disease it is recommended that men should be regularly checked from the age of 45. If there is a family history then they should be checked from age 40.

The prostate check should be carried out by an urologist and usually comprises a blood test (PSA - prostate specific antigen) and examination of the prostate, where the doctor feels for any suspect lesions. This check is very important; it is a way of monitoring the state of the prostate. Only in this way can a complete removal of the tumour through a radical prostatectomy, or via radiotherapy, be achieved. If the prostate carcinoma is limited to the prostate the chance of a cure is about 90%. If the tumour has already spread from the organ then the likelihood of a cure decreases dramatically and often makes it impossible. If there are any metastases in the lymph nodes, or other organs, the tumour can no longer be cured. However, with the help of modern hormone treatments it is often possible to prevent the tumour from growing further for several years.

Radical prostatectomy is an operative procedure aimed at a complete removal of the prostate gland and seminal vesicles. Once the prostate (situated between bladder and urethra) is removed, the urethra is reconnected with the bladder and the patient is postoperatively fitted with a permanent prosthesis for a period of time. It was standard practice to also remove a patient’s lymph nodes at the same time, but it is now more common to do this if the patient's PSA is lower than the normal levels.

The operation can be carried out through a cut in the lower abdomen or through laparoscopy. There have been significant improvements in maintaining patients' comfort and, in the cases treated so far, achieving a 90-99% cure rate of cases and the latter - as long as the nerves on both sides have not been damaged during the operation, in 70-73% of cases.

Radiotherapy - The tumour is destroyed via X-rays directed at the prostate gland. There have been many technological advances in this treatment that have resulted in a decrease in the side effects on the intestine and bladder. If the tumour is limited to the prostate this treatment can also achieve a complete cure and the level of success is comparable to that of surgical removal.

Other methods - Because prostate carcinomas tend to grow quite slowly, so-called ‘watchful waiting’ is another option for treatment. However, the EAU believes that this method of treatment should only ever be chosen by an experienced urologist and requires stringent regular check-ups.

Brachytherapy is another method, and involves the treatment of prostate cancer with good levels of grading.
Urinary incontinence (SUI) is a common condition affecting millions of women worldwide, 'said Professor Steinar Vrtiska, head of the Department of Urology at the University of Bergen, Norway. This difference accounted to be both 40 percent in the placebo group. Compared to a median reduction of 54% in the frequency of incontinence episodes, 80mg of duloxetine experienced a median reduction of 40 percent in the placebo group. This difference accounted to be both statistically significant and clinically relevant, with a median improvement of 43.2% of subjects in the placebo group.

Disadvantages of MDCTU - MDCTU generates a lot of images, so it takes more time to read, Dr Cohan pointed out. ‘...but nowadays we have to work much faster and are reimbursed less for the studies we read.’ The last thing we want is a new study where we have hundreds of images to examine. Second, MDCTU exposes the patient to more radiation than they would have received from an IVU or even a standard abdominal CT scan, with possible radiation to the patient to more radiation than they would have received from an IVU or even a standard abdominal CT scan, with possible radiation to the patient to more radiation than they would have received from an IVU or even a standard abdominal CT scan, with possible radiation to the patient to more radiation than they would have received from an IVU or even a standard abdominal CT scan, with possible radiation to the patient to more radiation than they would have received from an IVU or even a standard abdominal CT scan, with possible radiation to the patient to more radiation than they would have received from an IVU or even a standard abdominal CT scan, with possible radiation to the patient to more radiation than they would have received from an IVU or even a standard abdominal CT scan, with possible radiation to the patient to more 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Severe sepsis: First 24 hours are critical

Sepsis causes up to 135,000 deaths in Europe each year. It is a particularly serious condition that affects people of all ages, and more people die from sepsis than from breast or colon cancer. Severe sepsis occurs when an infection (bacterial, viral, fungal or parasitic) – often due to surgery, burns, cancer or a major injury - triggers a cascade of immune system responses that can lead to acute organ dysfunction.

"If a patient with severe sepsis does not show improvement within those first 24 hours, the risk of death dramatically increases," said Dr. Mitchell Fink, MD, PhD, at the University of Vermont Medical Center in Burlington, Vermont.

Severe sepsis is a problem in critical care that affects millions of people each year. More than 500,000 cases are reported in the United States, and 30,000 to 60,000 people die as a result of this condition each year.

In the first two days of sepsis, 50% of patients who are at risk of death from sepsis will die.

Signs and symptoms of sepsis include:
- Fever or a low body temperature
- Rapid breathing
- A heart rate greater than 90 beats per minute
- New confusion or altered level of consciousness
- Cold, clammy, or pale skin
- Pale or blue lips or nails
- Decreased urine output
- Changes in mental status
- Hypotension

By Michael R Pinsky MD, Dr hc

The haemodynamic effects of ventila- tion are complex and multiple, but a number of four clinically relevant concepts:

- Spontaneous ventilation is exer- cise. It increases patient work of breathing, initiation of mechanical ventilatory support will improve O₂ delivery to the remainder of the body by decreasing O₂ consumption. To the extent that mixed venous O₂ also increases, arterial PO₂ will also increase due to any improvement in gas exchange. Similarly, weaning from mechani- cal ventilation will reduce the cardio- vascular stress test. Patients who fail to wean also manifest cardio-vascular insufficiency during the failed weaning attempts.

Improving cardiovascular reserve or decreasing inotropic therapy may allow patients to wean form mechanical ventilation.

- Spontaneous inspiration adds to endogenous time and may increase oxygen delivery from airway and pleural pressure. When this pressure difference exceeds pulmonary arterial pressure, pulmonary vessel collapse as they pass from high pressure arteries into the alveolar space increasing pulmonary vascular resistance. Thus, hyperinflation increases pulmonary vascular resistance, pulmonary arterial pressure, and the pressure difference between the pulmonary and systemic circulations.

- Spontaneous inspiration and/or reduction in PEEP may reverse this effect.

- Inotropic therapy may allow patients to wean from mechanical ventilation and improve oxygenation.

By Michael R Pinsky MD, Dr hc

Liver failure therapy

MARS - an extracorporeal liver support system

In cases of liver failure, albumin is essential to help maintain pressure in the blood, because blood detoxification carried out by the liver is impaired. According to the UK’s John Radcliffe Hospital, an albumin-based extracorporeal liver support system (MARS) has been used to treat over 4,000 liver cases in over 30 countries. The system is an economical alternative to compensation of chronic liver diseases: acute liver failure and liver dysfunction, similarly to cardiotoxic drugs, types e.g. drugs, mushrooms; liver transplant failure; drug-induced cholestasis; multiple organ failure; therapy-resistant priapism due to liver diseases. Using the system, custom extracorporeal renal substitution therapies are combined with the removal of small (15-45 kD) and medium (45-100 kD) molecular substances (small or medium water-soluble and albumin-bound toxins selectively and simultaneously). Via a catheter, a patient’s blood flows to a detoxification system simulta- neously. Albumin and larger molecules do not pass through this membrane, and it allows the blood and albu- min to dialyze flow past one another without contact. Special absorbents allow the albumin to be regenerated for the repeated transport. Thus the liver can be supported in detoxify- ing blood in liver failure, and the patient’s prognosis and condition can be improved to a highly signific- ant degree,” the firm reports.

Clinical efficiency

- Hyperbilirubinemia: Clinically, high serum bilirubin is strongly bound to albumin, is considered an indi- cator of the accumulation of albu- min-bound substances in the case of intrahepatic cholestasis. For the first time, both bilirubin and other albumin-bound substances can be removed selectively using MARS Therapy. Present results give rise to the assumption that MARS has a direct effect on hepatic cholestasis.
- Hepatic encephalopathy/brain oedema: Ammonia is considered the main cause of hepatic encephalopathy (hepatic coma) and brain oedema that develop as complications in liver failure. However there is little evidence to show that standard renal substitu- tion procedures, by removing this water-soluble substance, have a significant effect on these charac- teristic complications that are an important factor in prognosis, Perhaps other albumin-bound sub- stances, such as tryptophan, man- ganese, false neurotransmitters, GABA, or endogenous benzodi- azeppines, are essential in the pathogenesis of hepatic encephalopathy. All of the sub- stances can be eliminated from the blood using MARS Therapy.
- Result: the patients wake, and the degree of hepatic encephalopathy is reduced. Often, an increased intracranial pressure causes brain stem damage; it is also a frequent cause of death in cases of acute liver failure. Glutamine accumu- lates as a metabolic product of glutamate, and may cause neurotransmission, causing astrocyes or other cells to swell, which, in turn, results in compression of the brain. As various studies have shown, MARS can stop this process and/or reduce intracranial pressure.

Haemodynamics: Various vaso- active substances, such as plasma nitric oxide (NO) are thought to be involved in the character- istic haemodynamic situation in liver failure therapy

Liver failure therapy

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Haemodynamics: Various vaso- active substances, such as plasma nitric oxide (NO) are thought to be involved in the characteristic haemodynamic situation in liver failure therapy.
Liver metastases

Laser-induced interstitial thermotherapy brings good results

Professor of Radiology Thomas J Vogl, and a team at Frankfurt University Hospital, have treated liver metastases with minimally-invasive laser-induced interstitial thermotherapy (LITT) since 1993 and report ‘very good results’ in the 1,300 patients treated. Using MRT-guided LITT the team has also destroyed about 6,000 liver tumours. Just under 60% of the patients with liver metastases had colorectal carcinoma, the second largest number had breast-cancer - the two groups in which liver metastases is found most frequently.

The gold standard for treating these liver metastases continues to be open surgical resection. However, over 50% of these surgical patients develop new metastases (recurrences) afterwards, which require further surgery, radiation or chemotherapy, the professor reports. However, by then surgery is often no longer possible, nor is chemotherapy very promising. ‘We have in LITT a gentle procedure at our disposal, with which we can offer these patients more options,’ said the professor. The survival rate after LITT treatment is comparable to that of open surgery. ‘Plus,’ Prof. Vogl added, ‘the complication rate after LITT is so low that minimally-invasive MRT-guided LITT under local anaesthesia can be considered a safe and reliable procedure. We have patients whom we treated eight to ten years ago who have remained tumour-free to this day.’

Currently, liver tumours are the most important indication for LITT. This is limited to a maximum of five lesions with a diameter of up to 50 mm (1.97”). LITT can be used, for example, to treat patients in whom, after liver resection, recidivating metastases have formed due to intraoperative chemotherapy, or that attack both hepatic lobes. The procedure is suitable for patients who cannot tolerate surgery for various reasons. Additionally, LITT can be used to bring patients to an operable state. Finally, LITT is an option for patients who reject surgery or chemotherapy.

Besides its application in treating liver tumours, the group says LITT is also suitable to treat pulmonal metastases and tumours, or soft-tissue tumours that have formed recidivating tumours or lymph-node metastases in the headneck region, the abdomen, or the peritoneum. Kidney and prostate tumours, as well as other soft-tissue tumours, are still special indications for LITT.

The German Society for Laser Medicine awarded the Father Leander Fischer Prize (Pater-Leander-Fischer-Preis) to Professor Vogl and his team for this pioneering work.

Prof. Vogl considers the decisive advantage of LITT to be its excellent monitoring of the course of treatment and the results of surgical intervention. All therapy monitoring can be performed with magnetic-resonance tomography (MRT). This ensures that, in every case, the entire metastasis - including a 10 mm (0.4”) wide safety border - has been desiccated.

This is also where LITT is superior to radio-frequency ablation (RFA), which has also been used recently for minimally-invasive treatment of liver metastases. “RFA leads in the MRT system to interference and image artefacts and makes it extremely difficult to estimate satisfactory image evaluation,” said Prof. Vogl, when explaining why observing BPA treatment via MRT is not possible. Since 100 per cent therapy monitoring can therefore not be guaranteed, local recidivations sometimes form after RF ablation. ‘Many patients that we treat with LITT had been treated previously with RF ablation.’

The equipment used by the Frankfurt team is produced by Trump Medizin Systems, which reports that currently it is only manufactured in Germany, in order to offer a complete system for laser-induced interstitial thermotherapy. This includes laser devices, catheters and interstitial fibres.

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PENTAX Europe GmbH reports that first European studies for new technologies, to simplify the diagnosis and earlier identification of cancers, are running at the Dr. Horst Schmidt Clinics, Wiesbaden, under the direction of Prof. Dr. med. Christian Ell and PD Dr. med. Thomas Rabenstein, leading specialists in the field of gastrointestinal endoscopy and early cancer diagnosis.

Optical Coherence Tomography

Three years ago PENTAX began a co-operation with LightLab Inc, Boston, on Optical Coherence Tomography (OCT) in endoscopy, which aims to identify microstructures in gastroenterological and pulmonological applications. OCT combines low-coherence (US) with microscopic image quality. However, unlike US, images are generated via light waves rather than sound waves. Using infrared light, image resolution can be improved eight to 25-fold over US quality. This extremely high resolution reveals even the smallest tissue changes within the mucosa.

Confocal endoscopy in gastroenterology -

Opening up this second research avenue, PENTAX formed a joint venture in 2002 with Optiscan Ltd, Melbourne.

Confocal endoscopy is used in the early detection of intestinal cancer, for example. Laser light is applied directly via an endoscope, and microscopically accurate, real-time images of living cells can be generated in thousand-fold magnification. Ruledependend laser light is focused on tissue to generate those images. The light beam is reflected by a fluorescent contrast agent in the mucosa and transmitted via confocal fibre optics - which only conducts light from a specified focal plane - to the processor, where the light signals are transformed into images. Thanks to thousand-fold tissue magnification, PENTAX claims: ‘...microscopic images obtained enable recognition of structures down to the size of cell nuclei’. PENTAX reports that this technology also promises a reduction in the number of specimens taken for histological analysis. ‘Early detection of intestinal cancer will thus be significantly facilitated.’ These devices do not conform to the MBD and cannot be put into service until compliance is obtained.

New technologies to improve early cancer diagnosis

Endoscopy

Endo view

Below left: Compared with ultrasound, Optical Coherence Tomography (OCT) can improve image resolution 8-25 fold

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A back-up apnea function ensures safe ventilation in support modes. The sensitive triggering system helps minimize the work of breathing. Modes like enhanced Volume Support deliver the required tidal volume at the lowest pressures.

Servo\(i\) represents the ultimate in flexible, adaptable ventilation for all patient categories.

A comprehensive array of tools lets you investigate many treatment options.

Servo\(i\) – A single system for treating all your patients.

For more information, visit: www.maquet.com/criticalcare