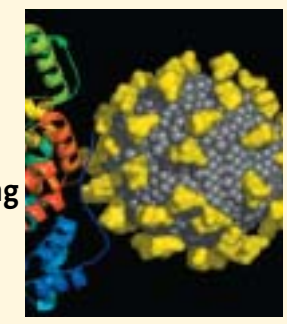
ISSN 0942-9085

Russian summaries: Read pages 28–31!
Обзор статей на русском языке читайте на стр. 24–27!

EUROPEAN HOSPITAL

THE EUROPEAN FORUM FOR THOSE IN THE BUSINESS OF MAKING HEALTHCARE WORK



VOL 16 ISSUE 4/07 AUGUST/SEPTEMBER 2007

Diuretic pill extends life

UK & France – The *Hypertension in the Very Elderly* Trial (HYVET), the biggest global clinical trial to assess the benefits of lowering blood pressure in patients aged 80+, was halted in July, two years before its scheduled completion in 2009. Christopher J Bulpitt MD, the trial's Principal Investigator and Professor Emeritus of the Care of the Elderly Department at Imperial College London, said the interim findings indicated that an inexpensive, low dose diuretic (indapamide 1.5 mg sustained release) and if needed, an additional ACE inhibitor (perindopril), taken daily, reduced the number of strokes and mortality at a statistically significant level.

3,845 patients in seven countries (Bulgaria, China, Finland, Romania, the Russian Federation, Tunisia and the UK) participated. The trial was designed to determine whether a 35% difference occurred between a placebo and active treatment. Secondary outcome measures included total mortality, cardiovascular mortality, cardiac mortality, stroke mortality and skeletal fracture. All patients in the double-blind, randomised, placebo-controlled trial, begun in 2001, are being seen for a final visit. Participants receiving a placebo will be offered the option of switching to active indapamide 1.5 mg SR-based antihypertensive treatment.

Results from the HYVET trial, which was funded by the British Heart Foundation and the Institut de Recherches Internationale Servier, in France, and co-ordinated by scientists at Imperial College London, are expected to be published in a peer-reviewed journal and presented at a major medical meeting in spring 2008. *Report: Cynthia E Keen*

Leaders launch a new global health partnership

UK & Germany – An *International Health Partnership* is to be launched (5 September) to bring together major donor countries, as well as key international agencies such as the World Bank and the World Health Organisation, to hasten the Millennium Development Goals (MDGs) that aim to reduce infant and maternal mortality and tackle HIV/AIDS, polio, measles and many other diseases.

The new partnership follows talks at 10 Downing Street between the UK's new Prime Minister Gordon Brown and German Chancellor Angela Merkel, who later jointly announced that addressing healthcare and aid provision was now a 'development emergency'.

Speaking at the United Nations in June, Prime Minister Brown had urged the most developed countries to get back on track with meeting their jointly agreed Millennium Development Goals (MDGs), which were established by the UN back in September 2000. These include specific commitments, such as eradicating extreme poverty and achieving universal primary education – aims to be met by 2015.

For her part, earlier this year Chancellor Merkel had led the G8 summit, when the world's richest nations promised to honour financial commitments and improve the co-ordination of aid with national health plans of recipient countries.

The two leaders pointed out that the MDGs that focus on healthcare were the 'least likely to be met' by the agreed target date of 2015, adding that an 'improved approach' was needed. This would entail strengthening of 'weak systems' that suffer a lack of workers and clinics, and improving co-ordination of 'complex' and 'fragmented health provision'.

Following their meeting, Prime Minister Brown said: 'We re-affirm our commitment made at the G8 and the EU to provide the financing needed to meet our health commitments through the established institutions and mechanisms. In this context, the replenishment of the Global Fund will be a key step. We will also explore innovative financing mechanisms to meet these commitments.'

They two leaders stated: 'We see this [the new partnership] as a critical step in our call for an international mobilisation of effort to achieve the MDGs that will build year on year until 2015. Our efforts must bring together the private sector, NGOs, faith groups, international agencies and governments in a new partnership to reduce poverty, improve health and provide opportunities for the poor across the world.'

During a press briefing, Chancellor Merkel added: 'We strongly welcome the British initiative, which is aiming at us, combined with the Millennium Development Goals, and that is the health initiative that the British have proposed. We believe that it indeed offers us an opportunity to help us efficiently work towards our compliance with those Millennium Development Goals. I will be travelling to Africa very soon and I will do my best to canvas for their support.'

Richer countries urged to fast-track Millennium Development Goals for healthcare

Bulgaria issues first electronic medical cards

A pilot project begun in February by the Ministry of Health and the National Health Insurance Fund (NHIF) has resulted in Bulgaria issuing its first electronic medical cards. The pilot project is run by the international eHealth specialist ICW* in partnership with the firms Cisco and Kontrax.

From September 1,000 inhabitants of the towns of Slivnitza and Aldomirovzi (both about 30km from Sofia) will receive personal electronic medical cards (EMCs). These will predominantly be given to chronically ill patients by their general practitioners (GPs) during regular surgery visits. Patients participating in this project were nominated by the GPs.

Each EHC is fitted with a microprocessor chip that stores the patient's personal data, issue and card number, and a security certificate; data that enables an automatic check of the patient's insurance status and GP allocation.

Electronic receipts for drugs paid for by the Bulgarian medical insurance are also stored on the chip.

Currently the system is being tested in a field project and participating doctors and chemists are receiving training from specialists at ICW and Kontrax. After these tests and training sessions the pilot project will begin and the first Bulgarian electronic prescriptions will be issued.

In the first six months after the official start of the project the infrastructure was developed along with specific software: All doctors and chemists in Slivnitza and the NHIF were linked to a reliable, secure private network. Cisco supplied the networking equipment, firewalls and IP telephones.

ICW, main contractor and systems integrator for the project have adapted their software solutions, which have already been used in Germany and Austria, to the specific requirements of the Bulgarian healthcare system. The ICW software development kit (SDK) seamlessly links the medical card system with the software used in surgeries and pharmacies. The Kontrax software *Hippocrates* and the pharmacy systems *Pharmacy Expert* supplied by Libra Inc. and *Pharma Star*, supplied by AS Systeme, can now communicate with one another through the ICW eHealth- infrastructure solutions.

The pilot project for the Bulgarian electronic medical card was initiated by the Bulgarian Ministry of Health and the NHIF. ICW was appointed for its implementation in co-operation with Cisco and Kontrax.

** InterComponentWare AG (ICW) is an international eHealth specialist with sites in Germany, Austria, Switzerland, the USA and Bulgaria*

contents

206 tips to save money

Austria – 206 tips for administrative reforms, given by the Austrian Court of Audit to the finance in August, have created a bit of a stir. Almost half of the envisaged total savings potential of €4-5 billion is expected to result from a reform of the healthcare sector.

Simply by aligning the number of hospital beds with the European average, a considerable number of expensive acute beds could be saved and around €2.9 billion could be spent on out-patient care and surgeries, rather than on in-patient care. However, currently the structural conditions for this implementation are not ready and need to be created.

The number of acute beds in Austria has been continuously reduced over the years. However, with 6.1 beds per 1,000 people it is still high compared with the European average: 3.9 beds.

The Court of Audit is basically demanding a reorganisation of competencies in healthcare and hospital funding. One suggestion is to determine a fixed proportion of the gross domestic product (GDP) to be spent on healthcare (currently 10.2% including nursing). The Court of Audit has also targeted regulations on medical fees and special charges for potential savings.

The response from the Department of Health and representatives from the medical world has been partly positive, partly negative and partly acrimonious. Shifting the provision of medical services is unlikely to result in huge savings and would at best help to contain costs. Nobody can quite envisage a savings potential of around €2.9 billion whilst maintaining the quality of medical services. However, the approach taken by the Court of Audit has certainly resulted in a debate on principles.

A new concept for 24-hour care

A fierce debate around the illegal employment of foreign care workers in Austria resulted in a new concept for 24-hour care.

An estimated 40,000 nursing assistants, most from Eastern European countries, were being employed illegally in Austria. Since July 2007, the country has had a new, controversial concept for 24-hour care developed by the Ministry of Social Affairs. This system allocates care services to those who need them, or to their relatives, from a support fund for the disabled.

This aid can be worth up to €800 per carer for those in regular employment, or up to €225 for contractors (self-employed carers). The carer can either be directly employed by the person in need of care or their relative, can be a contractor working for somebody entitled to that care, or may be employed by a charitable organisation. By 1 July 2008, at the latest, carers will have to demonstrate that they hold qualifications in the theory of care to maintain quality assurance. Applicants must be able to prove that they are entitled to a level three (or higher) nursing allowance. Applicants' incomes are taken into consideration and the income limit is €2,500 net a month, excluding payments such as nursing allowance, special grants, family allowances, child benefits and housing benefit. This upper income limit increases by €400 for each dependant, and by €600 for each disabled dependant. Assets up to a cash value of €5,000, along with the value of the home if this is the main residence for the disabled person claiming, are excluded from the calculations.

This rule is applicable until 31st December 2007 and there are currently negotiations with the individual Austrian Länder to develop a system that can be implemented after the current system expires.

Medical Technologies Map of European Regions and Clusters

MediMap is an internet portal that evolved from an EU project with partners in eight countries. The aim is to encourage an exchange of experience and initiate and facilitate partnerships and business relationships throughout Europe for scientific organisations and medical technology companies.

The firm reports that the user can select areas of medical technology (product categories) for which he is seeking partners, and the portal produces a visual list presented as regions marked green. Then the user can zoom in to refine his regional selection, and click again for a results list that features all the relevant players in those regions. The list, says MediMap, provides a wealth of information, including company profiles, products and/or services, as well as graphical information in a separate PDF file, and contact details.

In another section, organisations not seeking partnerships can promote and market themselves, or observe the competition, etc.

MediMap points out that it also addresses universities, research institutions, hospitals and clinics as well as clusters, networks, initiatives, technology centres and incubators, and the company adds: 'Regional development agencies, economic development bodies and similar institutions will also come to appreciate MediMap for the opportunity it offers to intensify an exchange of experience with other regions in Europe via a regional profile they can place on the MediMap platform.'

To use MediMap, registration is required. Two levels of membership are offered:

Standard (free); Premium (fee: €100-600 depending on number of employees). Non-enterprise institutions pay €300.

Standard members can enter a profile of their organisation, but without logo or graphics, and they can only access contact data of searched profiles. However, they do have full access to medical technology profiles of the EU technology transfer database, MediMap points out.

Premium members enter full profiles, logos, etc. and have unrestricted access to all data. They can also include specific offers and receive enquiries about their products, services, technologies, or search for partners, for example EU projects under FP7. 'They may also choose personalised services via keywords (e.g. new members, new technological developments), then they will receive e-mails with those details,' MediMap reports.

Details: www.medim ap.eu
Contact: Rainer Hagedorn, MediMap Co-ordinator
E-mail: ha@zenit.de

New Technology Academy opened in Germany

Juergen Hahn, Managing Director

Hitachi Medical Systems has opened its *European Technology Academy* in Dusseldorf, to provide '360° Educational Programme' of training courses and information services for doctors, health service employees, scientists, patients, managers and engineers.

Whilst handling the regular training of the Hitachi Medical Systems Teams, the company reports that it is also making a contribution to the German research and educational landscape.

The Japanese firm Hitachi Medical Corporation develops advanced medical imaging systems that are distributed by Hitachi Medical Systems Europe Holding AG and national subsidiaries, distributors and partners. The product range includes systems using ultrasound, MRT, computer tomography and optical topography. The company points out that Germany is ranked second after the USA for innovation potential in medical technology, and that specialist training opportunities are important to secure this position for the future. 'The Hitachi Medical Systems Technology Academy in Dusseldorf is an impetus for innovation and a contribution to better national health care,' explained Dr Marco Dolci, President and CEO of Hitachi Medical Systems Europe Holding AG, based in Zug, Switzerland.

With a string of highly qualified specialist lecturers and advanced infrastructure, the Academy promises to provide training in a range of medical technology disciplines to the highest standards.

Dusseldorf's new Technology Academy

The courses

Clinical application: Aimed primarily at radiologists, specialists, technicians, nurses and carers interested in training in clinical applications.

The Health Care MBA Programme: For managers, doctors, experts and healthcare investors, this is offered jointly with the Nations Health Career School of Management in Frankfurt/Main.

Biomedical engineering: This enables researchers, professors and students to pursue concrete technical questions and development projects.

Service support: Practical training for specialists in magnetic resonance, computer tomography and ultrasound technology.

Forums: The Technology Academy offers a number of forums for researchers, students, patients etc.

Enrolment and full details:
www.hitachi-medical-systems.com
www.hitachi-medical-systems.de

CTA benefits coronary artery bypass graft patients

Cardiac CT angiography (CTA) performed after coronary artery bypass grafting surgery can reveal a high prevalence of unsuspected cardiac and significant non-cardiac findings that might otherwise be overlooked, according to a study by researchers at the University of Maryland Medical Centre, Baltimore ('Cardiac CT Angiography after Coronary Bypass Surgery: Prevalence of Incidental Findings, Pub: American Journal of Roentgenology [August. 189:414-419]).

This capability of CTA performed after major cardiovascular surgery has the potential to detect earlier treatable cardiac and non-cardiac complications that are not suspected at the time of the surgery or the CTA examination.

This first study of its kind, involving 259 postoperative cardiac patients or inpatients at the University of Maryland Medical, revealed that 20% had at least one potentially significant finding requiring therapeutic intervention or further radiologic evaluation. Without a CTA procedure, necessary treatment may not have been initiated.

Lead author Jeffrey S Mueller MD, a radiologist currently affiliated with Allegheny General Hospital (Pittsburgh, PA), wrote that the 'rate of incidental findings (compared with other peer-review published studies) may be higher because thinner reconstructions were used and IV contrast was administered'. The retrospective study evaluated patients between 10/02 and 3/06.

Dr. Mueller and his colleagues identified 24 patients who had at least one significant cardiac finding, 34 who had at least one significant non-cardiac finding, and seven who had both. The most common cardiac findings were moderate or large pericardial effusions, intracardial thrombus, and substantial paracardiac or mediastinal haemorrhage. Non-cardiac abnormalities included pulmonary nodules, pneumonia, lobar mucous plugging, and pulmonary embolism. One patient had a lung carcinoma.

Among the 259 patients, 40 had a routine follow-up cardiac CTA in the late postoperative period (mean 12.7 months). Of these, seven patients, or 17.5%, were identified with an incidental and unsuspected finding.

The researchers strongly recommend the utilisation of CTA for postoperative in-patients. They caution that the findings cannot be applied to patients with only suspected coronary artery disease.

Report: Cynthia E Keen

NETHERLANDS REPORTS FROM THE NETHERLANDS, BY **MICHIEL BLOEMENDAAL**

Surgery prohibited

The Healthcare Inspection group has ordered 14 hospitals to stop surgery on the gullet to remove a tumour. In 2006, the hospitals had carried out this risky procedure although not able to achieve the norm of at least ten annually, which the inspection group found irresponsible.

Survival chances are 2.5 times higher when this operation is carried out in a hospital experienced in this type of surgery, so the Inspection demands that hospitals perform at least 10 a year. Research showed that half of the hospitals that were allowed to operate did not have the right intensive care units for these patients. In all, 600 patients have received gullet surgery.

Apologies in stead of condolences

The wife of a patient, who had been treated in the intensive care unit of the Medisch Spectrum Twente Hospital after receiving serious burns during a barbecue accident, received a questionnaire by post asking her to tell the hospital management about her experience with condolences she had received from the hospital. The hospital letter arrived just as her husband arrived home. Its opening sentence read: 'Recently your husband died in the intensive care ward....' The hospital offered its apologies … better than condolences!

Furore over increased balloon angioplasty units

A decision by Ab Klink, Minister of Public Health, Wellbeing and Sports, to increase the number of balloon angioplasty facilities in hospitals to 30, has prompted the NVVC – the Dutch cardiologists association – to express concern that there will be too many centres and too few patients, and specialists will not be able to maintain the level of skills for this procedure. If the minister maintains his plan to allow hospitals to provide balloon angioplasty without cardiologists' support, then he will also overlook the advice of the National Health Council, which gives almost the same warning as the NVVC.

The Dutch Association of Heart Patients also commented: 'The quality of treatment by balloon angioplasty will without doubt worsen in this way. The consequences of these plans could be accidents, especially if something goes wrong in those hospitals without cardiologists' support, particularly when a patient has to be transported to another hospital, and an ambulance is stopped by traffic jams'.

Notwithstanding, the Minister appears to be determined to continue with his plan. It is expected that, by 2010, some 40,000 Dutch patients will need balloon angioplasty due to narrowing in the coronary artery.

ESMO Lifetime Achievement Award

The Dutch Cancer Institute (NKI) has won the ESMO Lifetime Achievement Award, presented by The European Society for Medical Oncology, for its 'excellent translational research into breast cancer'.

The NKI has bridged the field of molecular biological research and the clinic. In particular it has developed genetic assays for breast cancer that, according to ESMO, lead to better understanding of the disease and probably to more precise and less aggressive treatment.

The ESMO award – which includes €50,000 for research - was presented for the second time; last year it went to the Breast International Group (BIG), a platform for clinical research into breast cancer.

GERMANY

University hospital founds international consultancy

Germany – The Hamburg-Eppendorf University Medical Centre (UKE) has founded a consultancy in a joint venture with SOLVE Consulting Managementberatung GmbH and Hellman Worldwide Logistics GmbH & Co. KG.

Among its offerings the new firm, named MBConsult and Management GmbH (UCM), are advice on the development of medical concepts for healthcare; the design and planning of process-oriented infrastructures, and consultations on medical necessities, hospital management as well as education and training of medical and administrative staff.

Aiming 'to market German university medicine globally', the firm reports that its first projects include two in Kuwait - developing a medical concept for a children's hospital and the management of a prevention centre, and another in Tirana, Albania – managing cardiac radiology centre.

EHFG celebrates 10th anniversary


Bad Hofgastein

In 1998, during Austria's first EU presidency, Professor Günther Leiner founded the European Health Forum Gastein (EHFG). From 3–6 October this year, the Forum will celebrate its 10th anniversary. Our Austria correspondent Hans-Christian Pruszinsky asked Dr Leiner about the value and role of this organisation in Europe today.


Recently retired, Professor Günther Leiner MD, founder and president of the European Health Forum Gastein, was formerly head of the Institute of Rheumatology, Rehabilitation and Holistic Medicine, in Bad Gastein. As a member of the Austrian Parliament he was also particularly active in health politics

Looking back on the past decade, Dr Leiner is particularly happy that the EHFG has established a network and a forum where key stakeholders – from politics, industry, science and NGOs – meet to informally exchange ideas. 'Apart from high level scientific discussion in the workshops and forums, we have created a communication platform for experts and decision makers in many different areas. This enables us to explore and discuss major EU and WHO health policy projects. Several of our suggestions have been debated in the European Parliament' (EP), he pointed out.

Have his original goals been reached? 'My vision was to discuss European health policy issues on a supra-regional level and to integrate the four stakeholder groups I've mentioned. To a large extent, this goal has been reached. However, we didn't manage to the extent envisaged – the use of our discussion results as the decision basis by national parliaments and by the EU Parliament – albeit this is not quantifiable. Our results were presented to all parliaments and relevant health policy committees. It remains open as to how far they contributed to the actual implementation of health policies.'

Of what is he particularly proud? 'The diversity of the participants has developed significantly, not only in terms of internationalisation – see EU enlargement – but also in terms of the interests of the participating decision makers. Health policy makers from all kinds of national healthcare systems and with a wide variety of foci, representatives from large medical technology and pharmaceutical corporations, representatives of the social and health insurers, both private and public, numerous NGOs, patient lobby groups, the media, decision makers in clinical, care and administrative functions, representatives of private and public hospitals and other medical institutions – today, they all meet in Gastein.'

Is such a diversity of interests and demands manageable? 'Health policy is still handled nationally. I believe there are only a few important health policy issues that need discussion Europe-wide, which means they are definable and manageable.

'Obviously, the interests of the stakeholders – nurses, patients, industry, politics and administration – can differ widely. Also, groups such as the pharmaceutical and medical technology industries might have opposing views. But in the EHFG framework, time and again we witness that the different players forge issue-specific cross-sectoral coalitions. I guess most lobby groups have understood that they can reach their goals by co-operating with others, because successful lobbying for specific and particular interests has become extremely difficult. This is true for many issues, for example long-term care for the chronically ill, or patient safety, and issues regarding healthcare as an economic and growth factor.'

Might the range of issues have to be limited to enable their deeper discussion? 'We plan to offer separate scientific symposia for the different stakeholders, where topics that had been on the EHFG agenda and are particularly relevant for the individual groups can be discussed in more detail. We are also launching a 'Gastein Group' of members for the health committee of the EP and other MEPs, to strengthen results of our Forum at a political level.'

Since 2000, annual Gastein Declarations have been presented to the European Parliament. Have they affected EU health policy? 'One should look at the Gastein event and the Declaration as a unit. The Declaration is a summary of key results and recommendations emerging from the event. Political activities do not begin with the Declaration – they begin with the informal meeting of the decision makers in Gastein. There, we 'sow the seed'. We have often seen the Declaration used as a discussion aid and guidance. I'm convinced that many of our ideas made their way to MEPs via our papers, providing scientific backup for their policy initiatives.

'I'd also like to stress that neither event nor Declaration solely address the EU level; they also clearly target national decision makers. From the beginning we intend feedback effects between the national and the EU level, and between national levels. Due to their diversity, European healthcare systems are ideally suited to serve as incubators for new ideas. That's one of the ideas behind the European Health Forum Award, which we'll present for the first time this year.'

What concrete successes has the Forum achieved? 'The creation of a consultation mechanism regarding patient mobility is an example. Obviously, this suggestion was included in the Declaration. Also, the European Commission is about to adopt the first concrete suggestions to create a community framework for healthcare services. If you look at this process and the Declarations you'll realise that the EHFG has prompted many concrete impulses through the years.'

Given the outstanding diversity of forums and workshops this year, what are the burning issues? 'The focus will be on ageing and chronic diseases, and healthy environments.'

Where do you expect consensus solutions? 'The foundation of the Gastein Group in the European Parliament will serve as the basis for a co-ordinated implementation of our recommendations.'

The EHFG is a major tourism factor for the Gastein valley. Do statistics show its economic benefits here? 'The Gastein valley has a century-long tradition as a health destination, so the EHFG found the ideal venue. The Gasteiner Kur (Gastein spa treatment) combines three local elements: thermal water, steam bath and the 'healing galleries'. The combined use of radon and warmth soothes pain and contributes to post-trauma rehabilitation. Our valley also offers a wide variety of sports – summer and winter.

'During the three-day event held in October, about 2,000 participants stay here – in off-season Gastein that's significant. In addition, over 60% of EHFG contracts are conducted with local companies. The annual revenue generated by the EHFG in the Gastein region is around €500,000.

'A further significant factor is the promotional and advertising effect of the EHFG. Many participants return for a vacation. Our event elevates the image of the entire valley and strengthens the link between tourism and health – which is so important for Gastein.

'Between 1998 and 2006, we welcomed 4,000 participants at EHFG, and the number is increasing.'

On the EHFG's 10th anniversary, as its spiritus rector and president, what's your wish? 'That health policy issues that are discussed with earnestness and commitment by important personalities, and at a very sophisticated level, will be acknowledged, furthered and implemented by politicians.

'I'd like to also thank European Hospital for many years of fruitful co-operation, which I look forward to continuing in the future.'

No predicted boom in medical tourism

'*The world at home in German hospitals*' – thousands of wealthy foreign patients coming to boost budgets, this was the hope of many hospitals. Then along came a sobering study from Sozial und Seniorenwirtschaftszentrums GmbH (SWZ), conducted within the framework of *Healthcare Export Projects*, which are funded by the German Ministry for Education and Research to design, establish and market international healthcare networks.

In 2004, the study reports, only 50,000 foreign patients became in-patients in Germany, and most of them went to North Rhine Westphalia and Bavaria. However, 80% of these patients did not choose to check-in. Unhappily, they were emergency cases. Only 11,000 foreigners had travelled to the country for a specific therapy.

The figures indicate that luxurious rooms, VIP service and tourist sights alone do not attract foreign clients – an assumption corroborated by this figure: only 675 financially most promising 'deluxe' patients from the Arab Emirates found their way to German hospitals.

Among those who did opt for a German hospital 'proximity' played a major role. Thus North Rhine Westphalia benefited from Dutch and Belgian patients, Bavarian hospitals recorded predominantly Italian and Austrian patients. Moreover, socio-cultural considerations came into play as the rather high number of Turkish patients (2 000) indicate: because in some regions, e.g. North Rhine Westphalia, a large percentage of hospital staff is Turkish, language and cultural barriers are removed and the patients feel well treated.

A third criterion that influences the choice of hospital is the international reputation of the lead physician, which in most cases means that the he or she is specialised in treating certain conditions, or in using certain procedures. 'Top medicine' no doubt attracts foreign patients.

If congenital heart diseases require treatment, foreign patients entrust themselves to medical expertise found in Berlin; Hamburg is renowned for total endoprosthesis, and North Rhine Westphalia focuses on treatments for epilepsy and chronic cardiovascular diseases.

This indication-based specialisation might in fact offer a solution to fill the empty 'deluxe' beds in German hospitals, and in the end turn the 'guest patient' concept in to a success story. The SWZ presented its study and discussed future strategies at the Hauptstadtkongress in Berlin this June.

Details: www.swz-net.de

EVENTS

The 5th World Conference on Breast Cancer

4-8 JUNE 2008 CANADA

'Come and experience the great Canadian Prairie Hospitality!' say the organisers of the 5th World Conference on Breast Cancer (WCBC), to be held in June next year in Winnipeg, Manitoba – the 'cultural cradle of the nation, gateway to the Canadian west, and a meeting place for over 6,000 years,' the WCBC Foundation points out.

Attracting international speakers and offering interactive workshops, as well as poster exhibits, the event will not only be attended by medical experts, but also patients, as it intends to further highlight breast cancer in men and women and enrich international knowledge exchange.
Details: www.wcbcf.ca
E-mail: mail@wcbcf.ca

Moscow's 'Medical Fair'

From 19-22 September this year, the 'Moscow Medical Fair' will be held for the third time.

During the four-day event, in the Manezh Central Exhibition Hall, representatives of medical centres, sanatoriums and spas, based in Russia as well as other countries, will present potential patients/clients with their diagnostic methods and therapies, or preventive medicine and rejuvenation (beauty) treatments.
Details: www.global-expo.ru
www.mosmedsalon.ru

One for the diary! The World of Health IT

Austria - Following the first World of Health IT Conference & Exhibition last year, the organisers have decided that the 2007 meeting (22-25 October) will 'move on from exploring fact-based IT solutions to examining health IT in the wider context of health delivery'.
The line-up of 'star' speakers includes:
Richard Granger, who recently resigned his post as Director General of IT for the UK's National Health Service, in which he has served for five years. He is recognised for his 'outstanding contribution' to a massive modernisation programme that has made the NHS one of the world's largest networked and HL7-compliant infrastructures.
Robert M Kolodner MD, National Coordinator for Health Information Technology at the Department of Health & Human Services in Washington DC, USA, a post to which he was appointed in April this year to advance the US President's Health IT Initiative.
Richard C Alvarez, President & CEO of Canada Health Infoway, who is recognised for his contribution towards developing a national vision for reforming Canada's healthcare system by using innovation and technology.

An event not to be missed by hospital and healthcare communications specialists.
Details: www.worldofhealthit.org

EPIDEMIOLOGY

Could a virtual game help pandemic studies?

USA – Online game worlds might prove useful for the study of a spread of human infectious diseases, according to scientists Eric Lofgren and Nina Fefferman, of Rutgers University (Piscataway, NJ, USA) and Tufts University (Boston, MA, USA). In the September issue of *The Lancet Infectious Diseases* they describe how a programming error in a popular online role-playing game, *World of Warcraft*, caused a full-blown epidemic of a virulent, highly contagious disease. Although computer models of infectious diseases are of increasing importance, a limitation of these models is that they cannot predict the behaviour of individuals. The scientists realised that appropriate exploitation of online games might alleviate this constraint, since players' economic and social behaviour often mimics their real-world behaviour.

The outbreak began when Blizzard Entertainment released an update in September 2005, allowing higher level players to access a new area of the game. Players experienced combat with a powerful creature called Hakkar, who occasionally infected players with 'Corrupted Blood'. To the powerful players Corrupted Blood was no more of a hindrance than a cold, but a game-wide epidemic started after many characters teleported – a common feature of the game – back to urban areas before being killed or cured of the disease, where they infected more susceptible players.

Figure 2: Hakkar, the primary source of infection in World of Warcraft

Blizzard Entertainment's quarantine strategy failed because of the highly contagious nature of the disease, the inability to seal off a section of the game world effectively, and player resistance to the notion. Fortunately, the game developers had one additional option not available to public-health officials: resetting the computers.

This is the first time a virtual virus has infected a virtual human being in a manner even remotely resembling an actual epidemiological event. Currently, epidemiologists face major constraints in studies of diseases dynamics because they are limited to observational and retrospective studies. Computer models allow for experimentation on virtual populations without such limitations, but they rely on mathematical rules to approximate human behaviour. By contrast, human-agent virtual simulation may bridge the gap between real world epidemiological studies and large-scale computer studies by including the variability and unexpected outcomes that arise as a result of the behaviour of individuals. Lofgren and Fefferman say: 'We believe that, if the epidemic is designed and presented so as to seamlessly integrate with the rest of the persistent game world, in such a way as to be part of the user's expected experience in the game, a reasonable analogue to real-world human reactions to disease might be observed and captured within a computer model...By using these games as an untapped experimental framework, we may be able to gain deeper insight into the incredible complexity of infectious disease epidemiology in social groups.'

Source: The Lancet
Details: Nina Fefferman.
Phone: +1 781 710-5025
Email: feferman@math.princeton.edu

Needle-free drug delivery device scoops top award

Dr Charles Potter, Founder & CEO of Glide Pharma, receives the Best Business Award 2007 from actress Joanna Lumley at the Medical Futures Innovation Awards Ceremony. Left to right: Joanna Lumley OBE; Chris Gorman OBE; Dr Charles Potter (Founder & CEO, Glide Pharma) and Roberto Solari (CEO, MRC Technology)

The *Glide Solid Dose Injector (SDI)*, the needle-free drug delivery system that injects drugs in solid dosage form into the skin, has contributed to its manufacturer, Glide Pharma, winning the Best Business Award at the 2007 Medical Futures Innovation Awards. The competition had attracted over 500 entries. The Best Business Award is given to the overall winner from among the 25 award winners. Glide Pharma located at Milton Park, Oxfordshire, also won the Best Business Proposition Award in the Anaesthesia & Critical Care category, sponsored by Abbott Laboratories.

Ease of use also makes it ideal for self-administration e.g. by diabetics, and the device also eliminates needle-stick injury and disposal problems.

Glide Pharma is developing a range of new drug products for use with the system, the first of these to commence clinical trials shortly. This contains the drug octreotide acetate, a top seller from Novartis that recently came 'off patent'. It is used to treat neuro-endocrine tumours prior to surgery, as well as acromegaly, a chronic condition caused by abnormally high amounts of growth hormone.

Dr Charles Potter, Founder and CEO of Glide Pharma, received the Best Business Award at a glittering ceremony in London. He said the award had come at a time when the company is making excellent progress in production and partnerships, and is advancing the first of its own brand products, and negotiating with many major pharmaceutical partners to co-develop the Glide Solid Dose Injector with their proprietary drugs and vaccines.

The Medical Futures Awards judging panel included leading healthcare experts such as Sir Magdi Yacoub, pioneer of the heart and lung transplant; Baroness Susan Greenfield, Professor of Pharmacology at the University of Oxford; and Sir Richard Sykes, former Chairman and CEO of GlaxoSmithKline and currently Rector of Imperial College. Complemented by business experts, such as Sir Victor Blank, Chairman of Lloyds TSB Group Plc; and Sir Michael Sherwood, Chief Executive of Goldman Sachs, the panel is Europe's leading think tank on health and business innovation.

Andy Goldberg, founder of Medical Futures, said: 'Nine out of 10 of the largest medical technology companies are US-based, yet the UK produces some of the world's best ideas. Medical Futures has demonstrated a strong pipeline of innovations set to become the next high growth area and prove that the UK can be a world beater.'

RADIOLOGY

The Forum's Managing Director, Dr Thomas Feigl, greeted around 150 participants

Symposium: Innovations in medical imaging

The Forum Medizintechnik-Pharma – an association that provides a recognised contribution to the development of the co-operative environment in medicine, technology and pharmaceuticals, met for a symposium in Germany this July. Attended by representatives from member institutions, which number 560 from 14 countries (in Europe as well as the USA and Far East) it was chaired by Professor J. Ruediger Siewert MD, also chairman of the board of Heidelberg University Hospital, focused on medical imaging. This includes X-ray technology, encompassing all conventional technologies and computed tomography (CT), magnetic resonance imaging (MRI) and ultrasound (US).

Innovations in X-ray technology focus on digital post-processing of image data and on automation and standardisation of examination workflow. Currently, PET-CT is experiencing a boom. The stand-alone PET (Positron Emission Tomography) has been fully replaced by the combination of PET and CT. In one scan PET-CTs provide images which allow precise interpretation, in terms of morphology as well as metabolism (NB: In our next EH issue we will publish an interview with Dr Thomas Beyer of Philips Medical Systems on this subject).

In recent decades MRI has developed into an eminently successful imaging modality. MRI advantages include non-invasiveness and non-ionisation, and it can be used in a wide range of applications. However, like any other physical procedure, MRI has limitations. As far as clinical applications are concerned, these limitations can best be described by the so-called 'magic triangle': the interdependence of signal-to-noise ratio (SNR), scan time and image resolution. The development of coil arrays for signal detection allowed parallel data capture and thus significantly accelerated the imaging process. Current research is looking at further scan acceleration and whether and how it can be reached with multi-channel coil arrays.

In ultrasound technology new developments and the two-dimensional Doppler technique provide unmatched spatial resolution. Optimisation of signal reception turned out to be insufficient to realise spatial resolution of less than 5 mm. In previous ultrasound technology the waveform of the pulse depended primarily on the transducer's crystal properties and its backlash.

In modern compound wave generators, however, an electrical pulse which is adapted to the crystal properties avoids backlash and thus generates short micro pulses with clearer echo signals which significantly improve resolution.

All technological developments are driven by the need to provide the clinical user with high-quality, efficient and patient-friendly diagnostic imaging tools and methods. The symposium offered interesting insights in the state-of-the-art technology but also allowed a glimpse at the next generation of medical technology equipment. *Report: Guido Gebhardt*

CARDIOLOGY

EUROPEAN HOSPITAL

This special cardiology supplement is a EUROPEAN HOSPITAL publication
www.european-hospital.com

It's ESC time again!

Kim Fox, President of the European Society of Cardiology

And the focus is *heart failure*

Given the exponential increase in the patients presenting with heart failure in recent years, a total of 53 sessions have been dedicated to the topic of heart failure. The sessions include clinical updates and state-of-the-art lectures, but also the newest on diagnosis and therapy will be presented. In their welcoming address, Kim Fox and Jeroen Bax highlight some of the lures of this important and notable event for cardiologists worldwide

Jeroen Bax, Chairman of the Congress Programme Committee

1–5 September and the Vienna venue for the annual Congress of the European Society of Cardiology (ESC) will engross about 22,000 people, arriving from all over the world to attend Europe's biggest cardiology meeting. 351 sessions are planned to take place in 28 rooms, and there will be many presentations of original scientific work.

Four named lectures – four presenters

- *The William Harvey Lecture* on Basic Science will be presented by Professor P Carmeliet
- *The Geoffrey Rose Lecture on Population Science* by Professor P Puska
- *The Rene Laennec Lecture on Clinical Cardiology* by Professor W McKenna
- *The Andreas Gruentzig Lecture on Interventional Cardiology* by Professor T Luescher.

The Focus sessions

These consist of live transmissions from European locations – Katowice, Berlin, Bad Nauheim, Bern and Vienna – to demonstrate practical skills in imaging and intervention. Clinical Practice sessions will encourage interactive discussions between an expert panel and audience. Two of the session will focus on mild heart failure (HF) and end-stage HF.

Joint sessions

The American Heart Association and the American College of Cardiology, as well as societies representing subspecialties such as hypertension, atherosclerosis and diabetes, etc. will present joint sessions.

12 main sessions

These will be packed with important clinical topics, e.g. the relation between anaemia and heart failure, or the role of BNP in heart failure.

The safety of drug-eluting stents will be another hotly discussed subject, as will the increasing role of non-invasive imaging using different modalities, and the development of percutaneous valve therapy.

New ESC guidelines

Five new ESC guidelines are to be released on acute coronary syndromes without ST elevation, valve disease, cardiac pacing, hypertension and prevention of cardiovascular disease. In addition, the new Universal Definition of Myocardial Infarction (endorsed by the AHA, ACC and ESC) will be presented.

The EHSP

Lessons from the Euro Heart Survey Programme – an extensive questionnaire involving many hospitals in ESC countries across Europe – will be the focus of four other sessions.

Annual meetings

The five ESC Associations will report on their annual meetings or present their news in 90-minute sessions organised in the Association Corner. The five include subspecialisations – echocardiography, heart rhythm, prevention, percutaneous coronary intervention, and heart failure.

Working lunch

Participants can also fill their lunch periods with attendance at nine practical sessions under the banners *Meet the Expert; Read with the Expert*, and *How to*.

Three Hotlines - Two Clinical Trial Updates

Late-breaking trials and the most recent updates on published trials will be presented. These sessions frequently include large, randomised clinical trials that have major impact on patient management.

Basic Science

The Council for Basic Cardiovascular Science will present sessions in a bench-to-bedside format, focusing on the translational aspect of basic science, but also highly specific basic science research will be presented.

Abstracts and posters

Submitted abstracts: almost 10,000. Reviewers to grade abstracts: Acceptance rate: 37%.

New for 2007: the State-of-the-Art and Featured Research Track. Sessions will include a keynote lecture by an expert, combined with four oral presentations of the highest ranked abstracts on a specific top.

MRI and the diagnosis of arteriosclerosis and plaque imaging

The spatial-anatomic visualisation offered by MRI already provides immense diagnostic possibilities for cardiology. However, as yet, the potential of this imaging modality is far from exploited, according to Professor Bernd Hamm (right), of the Radiology Department at the Charité Hospital, Berlin. Daniela Zimmermann of European Hospital, asked him why

Professor Hamm: 'As far as the visualisation of vessels and vessel periphery is concerned, MRI has made other imaging modalities all but obsolete. Whole-body angiography, which is state-of-the-art MRI technology, for the first time offers the possibility to visualise all vessels non-invasively. Patients who suffer from a stenosis – which in most cases is accompanied by arteriosclerosis – will particularly benefit from this new technology. Arteriosclerosis is a systemic condition, which quite often means you will find stenoses in different regions of the body that have not yet become clinically relevant. In such cases, whole-body angiography can significantly influence therapy management: Imagine a patient who is diagnosed with a stenosis in the pelvic region but the whole-body angio shows a second stenosis, for example in the carotid artery. Obviously, to prevent future intra-operative complications, we will treat the latter first. This non-invasive method has many advantages – both for the physician and patient.'

What role does molecular imaging currently play in cardiology?

'In molecular imaging we – just like everyone else – are in the very early stages. We do basic research, so to speak. Research into the visualisation and differentiation of stable and vulnerable plaque is very important for us. Vulnerable - that is inflamed - plaque can rupture at any moment and cause thromboses, which are often fatal. At this point we do not have a method do distinguish vulnerable from stable plaque. This is where molecular medicine comes in: The macrophages (cells that play a crucial role in the inflammation process of the plaque) bind well with magnetic nano particles. In the Nano for Life Working Group, a research co-operation between Siemens and here at the Charité in Berlin, we work with ultra small iron particles that can make vulnerable plaque visible in MRI. Even more: we can determine the status of the inflammation, because the higher the inflammation activity the better the uptake of the iron markers. Based on the number and distribution of the markers in the body, we can then provide a very precise risk analysis for the patient. MRI is the most sensitive procedure to visualise these markers.

'There are also CT research projects that are important for cardiology – the non-invasive visualisation of the coronary vessels, for example. We are working with a 64-slice CT which is able to visualise the coronary vessels very reliably.

'In summary we expect immense progress in cardiological imaging in the near future – progress which will enable us to diagnose diseases earlier and more precisely.'

Hot Spots: NANOSCALE CONTRAST AGENT FOR IMAGING CORONARY ARTERIES

A next-generation diagnostic tool for cardiovascular disease, using a nanoscale iron particle, is now under development at a unique industry-government-university named Nano AG. A report from Siemens describes the research and progress at the centre

'The tiny particles under investigation are less than seven nanometres across, with an iron core that is highly responsive to the intense magnetism of an MR system. Most MR imaging of coronary arteries already employs contrast agents to improve image quality. Coronary arteries are small and due to the movement of the heart during the cardiac cycle, there is very little net imaging time, so you need a contrast agent to get a sufficient signal-to-noise ratio. The super paramagnetic iron oxide particles under development have an optimal signal-enhancing effect far above that of existing contrast agents. An ongoing phase II trial is measuring blood flow through coronary arteries. The goal is to compare images made with the nanocontrast agent to those made with traditional X-ray angiography.

A second application for the highly responsive nanoscale particles is more speculative, but could prove more valuable. With assistance from Siemens, the consortium leader of Nano AG, Prof. Taupitz and colleagues at other luminary academic sites are trying to attach the tiny particles to peptides that bind to specific structures in the body, which could turn the nanoparticles into disease–hunters inside the body.

To detect arterial plaque, the nanoscale iron oxide particles could be attached to a factor that would, in turn, attach to compounds involved in apoptosis. Programmed cell death in the artery wall is one sign of vulnerable plaque. A second tactic could link to compounds associated with angiogenesis, which often occurs in unstable plaque. In either case, the tiny particles will enrich within the pathologic vessel walls and generate hot spots on a MR image.

Currently, physicians must rely on indirect methods to specifically image diseased arteries. It is a change in paradigm for vascular diagnosis. We may have to look not so much at flow-limiting stenosis, or narrowing, but at the composition of the plaques and the change in the vessel walls. Using a specific contrast medium means to get functional information and then to make a prediction of the risk of plaque rupture in the artery.'

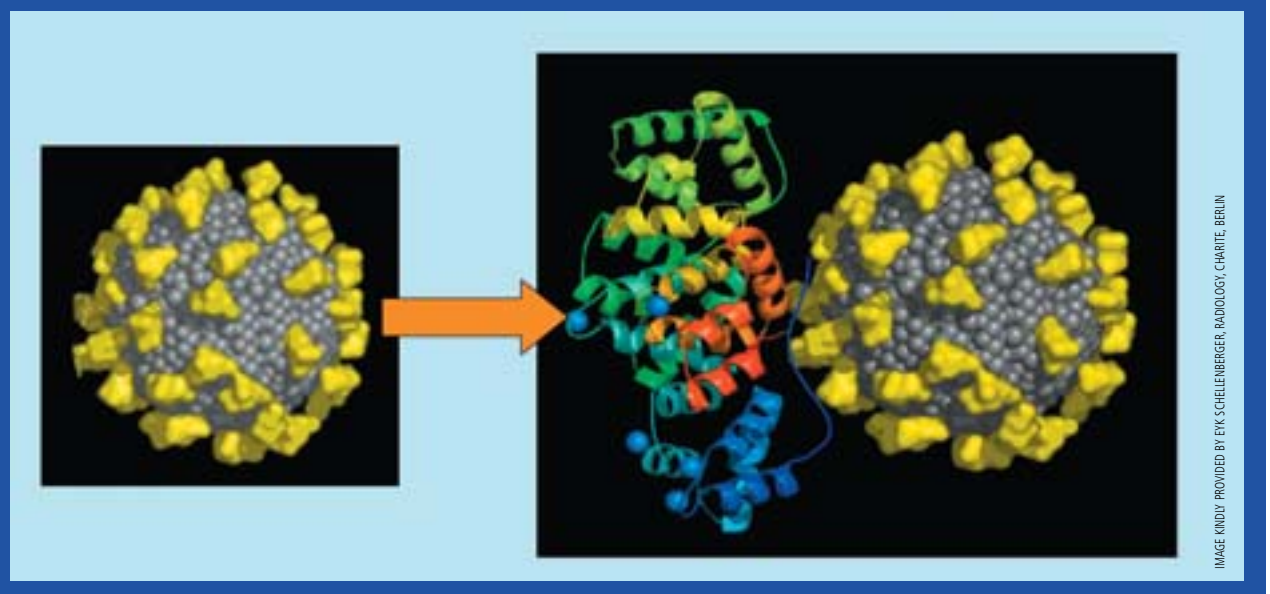


IMAGE KINDLY PROVIDED BY EYK SCHELLENBERGER, RADIOLOGY, CHARITE, BERLIN

VSOP particle with yellow molecules indicating the citrate bound to the iron oxide surface (grey). Functionalisation of the particle by specific peptides e.g. Annexin V

For and against

Absorbable metal stents

Dr Dirk Boese, West German Heart Centre, Essen

By **Dirk Boese MD**, with **S Sack MD** and **R Erbel MD**, of the West German Heart Centre in Essen, and Cardiology Department at the University of Duisburg-Essen, Germany

Coronary stents provide wall wrapping of dissection, prevent elastic recoil, and reduce restenosis after percutaneous transluminal coronary angioplasty. In addition, drug eluting stents loaded with antiproliferative agents inhibit intimal hyperplasia and offer a further reduction of restenosis. But stents are foreign bodies ('metal jackets') that transform elastic vessels into rigid tubes, impair vasomotion, and, due to the potential risk of even late thrombosis, require long term antiplatelet treatment.

To overcome limitations of current stent technology, a magnesium-based absorbable metal stent (AMS-stent) was developed in Berlin, by Biotronik GmbH & Co, and successfully tested in animals and below the knee interventions. The magnesium stent provides vessel scaffolding within the first weeks after implantation and is completely absorbed within eight weeks before long term complications may occur.

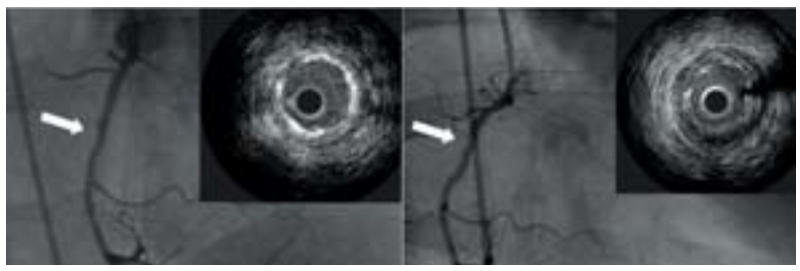
The efficiency of absorbable metal stents in the treatment of coronary artery stenosis was determined in the PROGRESS-AMS (Clinical Performance and Angiographic Results of Coronary Stenting with Absorbable Metal Stents) clinical trial. Seventy-one stents (3.0 - 3.5mm in diameter) were successfully implanted in severe coronary stenosis of 63 patients (mean age 61.3 ± 9.5 years). Procedural success could be achieved in all patients and the diameter stenosis could be reduced from 61.5% (±13.1%) to 12.6% (± 5.6%). During implantation, the stent characteristics were comparable to stainless steal stents (elastic recoil ~ 7%) and no MACE (Major Adverse Cardiac Events) were observed during hospital stay. After four months, the ischemic driven revascularisation rate was 23.8% and therefore comparable to conventional stainless steal stents. Intravascular ultrasound (IVUS) examination during four months follow-up demonstrated an advanced absorption process with only small 'stent remnants'. In the 12 month clinical follow-up period no stent thrombosis was observed.

This study is the proof of concept that biodegradable magnesium stents can achieve an immediate result similar to the result of other metal stents and be safely degraded after four months. Nevertheless, the restenosis rate remains high and modifications of the stent characteristics, i.e. prolonged degradation and/or drug elution are objects of further development addressing the problems of excessive recoil and proliferation.

Due to reduced radiolucency of the used magnesium alloy, the AMS-stent cannot be visualized by X-ray and induces no metallic artifacts during assessment with computed tomography and magnetic resonance. This characteristic allows the non-invasive assessment, even of the stented segment, after implantation of an AMS-stent and gives new opportunities in the follow-up examinations after coronary artery interventions.

Contact for references and further details: Dr Boese. +49-201-7234888 e-mail: dirk.boese@uk-essen.de

Absorbable metal stent (from Biotronik) after expansion (left panel) and in electron microscopy magnification (right panel)



Final angiographic result after implantation of a 3.0x15 mm AMS-stent in a proximal right coronary artery. Arrow indicates stented segment. Intravascular ultrasound examination indicated a good stent expansion with complete stent apposition (Panel A). After four months, angiography revealed a good long term result, without significant restenosis. IVUS- control proved a nearly complete absorption of the AMS-stent with only stent remnants (Panel B).

BP measuring device

A new blood pressure (BP) measuring device that provides, along with all the conventional cardiovascular parameters, the cardiac stroke volume, peripheral resistance and arterial augmentation, has been developed at the Austrian Research Centre (ARC), Vienna-Seibersdorf. The result of seven years' work by researchers, the device, named CardioMon, is now ready for sale.

The ARC refers to one study in particular to underline the need for their advanced measuring system. Conducted during a *Vienna Cardiovascular Events* programme in 2005, within one week the blood pressure of 7,018 patients was measured. Of those, 1,109 people were receiving treatments. However, only 175 were being correctly regulated, mainly because conventional blood pressure measuring methods could only indicate symptoms, but not the cause of problems. For those, invasive methods, such as catheterisation, have been necessary. The ARC reports that its CardioMon will make such a difference to this, that it will have supplanted all conventional blood pressure measuring tools in just a few years.

Cardiac resynchronisation therapy

Worldwide clinical trial gets underway

Switzerland – A clinical trial of cardiac resynchronisation therapy (CRT) in patients with advanced heart failure and a narrow QRS complex <120 ms, has been initiated by Zurich University.

The clinical benefits of CRT, as an adjunct to drug therapies, in patients with NYHA class III/IV heart failure (HF) have been shown repeatedly in randomised trials and clinical practice. *The Miracle ICD trials* [Young JB, Abraham WT, Smith AL, et al,. Combined cardiac resynchronisation and implantable cardioversion defibrillation in advanced chronic heart failure: The MIRACLE ICD Trial. *JAMA*. 2003;289:2685-2694], *and Companion trials* [Bristow MR, Saxon LA, Boehmer J *et al*. Cardiac-resynchronisation therapy with or without an implantable defibrillator in advanced chronic heart failure. *N Engl J Med* 2004;350:2140-50] suggested that CRT, which paces the left as well as right ventricles simultaneously, used in conjunction with an implantable cardioverter defibrillator (ICD) improved the quality of life, functional capacity and exercise test performance in patients with HF with a wide QRS (⩾120 ms) interval. Indeed current guidelines for the selection of suitable patients for CRT based on the published evidence advise that optimal candidates to benefit from CRT have QRS >120 ms. [Strickberger SA, Conti J, Daoud EG et al. Patient selection for cardiac resynchronization therapy: from the Council on Clinical Cardiology Subcommittee on Electrocardiography and Arrhythmias and the Quality of Care and Outcomes Research Interdisciplinary Working Group, in collaboration with the Heart Rhythm Society. Circulation 2005;111:2146-50.]

This means that until now, the majority of HF patients, those with a narrow QRS complex, have been excluded from CRT, although suffering from dyssynchrony. The *Echocardiography guided Cardiac Resynchronisation Therapy* (EchoCRT) study aims to provide the necessary evidence base to expand therapeutic options for this population.

EchoCRT is the first prospective, randomised clinical trial to evaluate the impact of cardiac resynchronisation therapy in HF patients (NYHA Class III) who show mechanical dyssynchrony as assessed directly by echocardiography. Echocardiogram (ultrasound of the heart) will provide a direct measure of ventricular dyssynchrony, which is not apparent on indirect assessment by ECG because of the narrow QRS. More than 1,000 patients with advanced HF (NYHA Class III) will be randomised into treatment groups with CRT or no CRT. Both groups will receive an ICD to protect against sudden cardiac death, but in only half of the patients will the CRT capacity be switched on.

The co-principal investigators in Zurich are Dr Frank Ruschitzka and Dr Johannes Holzmeister.

In an interview with Dr Ruschitzka, we asked why Zurich has become the international centre for this study and what the rationale is behind the EchoCRT trial.

'This is a very large clinical trial of a medical device and will involve 120 different centres worldwide, but it's led by Zurich because of our wealth of experience in clinical cardiology trials.' The trial is sponsored by Biotronik, which manufactures the implanted devices but, Dr Ruschitzka pointed out, 'EchoCRT is an independent, investigator led trial overseen by an international executive committee.'

'Many cardiologists feel, as I do, that we are not treating many HF patients who would benefit from CRT simply because there are no scientifically evidence-based guidelines telling us to. I have used CRT successfully in patients with narrow QSR, and so have many others. The medical literature supporting this belief is increasing with observational studies and anecdotal cases of success in several thousands of these patients.

'The ESC recently conducted a poll asking its members if they thought patients with a narrow QSR would benefit from CRT. The time is now right for a large-scale, international trial to provide the definitive answer. Recruiting will begin in the first quarter of 2008 and will probably last for up to two years. The trial itself will probably run for a further two or three years after recruiting is complete depending on when we reach the numbers required statistically of primary end-point. It would be stopped immediately if it became obvious that the benefits of CRT therapy were statistically superior. The results are due in 2011.

'I'm very confident that CRT is the way to go with HF patients with narrow QRS. These are very sick patients with a high morbidity and mortality. I am convinced that it is unwise to withhold CRT from this population and that EchoCRT will provide the necessary evidence to support this treatment change.'

Progenitor cell transfer for cardiac repair after myocardial infarction

By **Stefan P Janssens**, Professor of Medicine at the Cardiology Department, Gasthuisberg University Hospital, KU-Leuven, Belgium

Progenitor cell transfer to repair the damaged heart has emerged as an innovative and promising recent development in cardiovascular medicine. Since the first reports that adult bone marrow-derived stem cells were capable of transdifferentiating into a cardiomyocyte phenotype, research in regenerative medicine has advanced in an explosive manner.

A variety of progenitor cell types that reside in bone marrow, or circulate in the blood, are capable of improving function of the infarcted heart in pre-clinical models, but underlying mechanisms remain incompletely understood. Consequently, the traditional view of the heart as a terminally differentiated organ has been challenged by several groups, who have reported the isolation of cardiac stem or progenitor cells - characterised by the absence of traditional cardiomyocyte, endothelial, or smooth muscle markers, and that have a slow turn-over rate, and might constitute an endogenous reservoir for cell-based repair.

However, massive cell loss of cardiomyocytes and these progenitors alike, such as after acute myocardial infarction, precludes sufficient repair capacity of these endogenous progenitors in the infarcted territory. Therefore, cell-based repair requires inventive strategies to mobilise or deliver significant numbers of progenitor cells to sites of injury and secure their survival, or to stimulate neighbouring cardiac precursor cells to multiply, integrate, and couple with spared myocardium and enhance myocardial function.

While those strategies are very appealing, a major question is whether we have the knowledge and tools to implement them at this stage in clinical practice, at an equitable cost-benefit?

Initial trials of autologous bone marrow cells focused understandably on safety and feasibility both in patients with acute myocardial infarction (AMI) and chronic ischemia and reported enhanced recuperation of LV function. However, by virtue of their design, these studies were not randomised, or lacked a proper control population undergoing the exact same interventions as patients receiving cell transfer. Subsequent double-blind, placebo-controlled randomised trials of autologous bone marrow cell transfer in myocardial infarction patients have shown augmented recovery of global LV function after cell transfer of variable magnitude (absolute increase ranging from 1.2 to 2.5%). The latter was associated with a favourable effect on myocardial perfusion (evaluated as coronary flow reserve), infarct remodelling with a greater reduction in infarct size and greater recovery of regional LV function. Although we are still in a preliminary phase of clinical development, meta-analysis of published randomised controlled trials and cohort studies of bone marrow cell transfer (including 999 patients) confirmed an overall benefit, above and beyond state-of-the-art therapy.

While the absolute increase in global function recuperation may seem modest at first glance, it represents an incremental improvement of almost equal magnitude as the initial therapeutic effects of primary coronary revascularisation. Moreover, we now have convincing data from the largest randomised double blind study that a delayed strategy of cell transfer offers the greatest benefit and that it is almost exclusively observed in patients with a significant reduction in myocardial function at baseline.

These insights will help to facilitate strategies whereby cell-based treatment algorithms are reserved for patients suffering the largest infarcts and where cell transfer can be established according to the highest scientific standards. Indeed, quality assurance of all stem/progenitor cell isolates requires significant haematological expertise, and has been shown to have a major impact on clinical results in early exploratory trials.

At this stage, while safety has been uniformly reassuring, proof of clinical efficacy (improved survival and reduction of heart failure) awaits larger multi-centre outcome trials that are presently being designed. To implement standardised, SOP-based cell isolation, and characterisation protocols, haematological and cell culture expertise from experienced institutions, including central blood bank or Red Cross laboratories or bone marrow transplant centres, will be indispensable.

Finally, enabling such treatment at an affordable cost will require intense collaboration between translational scientists, physicians, healthcare administrators, and private and public health insurance companies.

The therapeutic potential of adult stem cells in CVDs

By Professor **Bodo-Eckehard Strauer MD**, Head of the Department of Cardiology, Pneumology and Angiology at Dusseldorf University Hospital

Cardiac infarction is characterised by tissue ischaemia with loss of contractile heart muscle. The consequence is cardiac insufficiency and disturbance to cardiac rhythm. About two thirds of all patients have no symptoms before an infarction; about two thirds of all patients do not survive their cardiac infarction. About a third of surviving infarction patients experience increasingly worsening heart function in the first year after the infarction (remodelling).

The aim of therapy is to re-open the infarcted vessel using acute procedures (balloon dilatation and stent implantation), though this is merely the tip of the iceberg and the destroyed heart muscle usually remains useless. This is where treatment with stem cells comes in as causal therapy, striving to regenerate heart muscle by injecting stem cells into it.

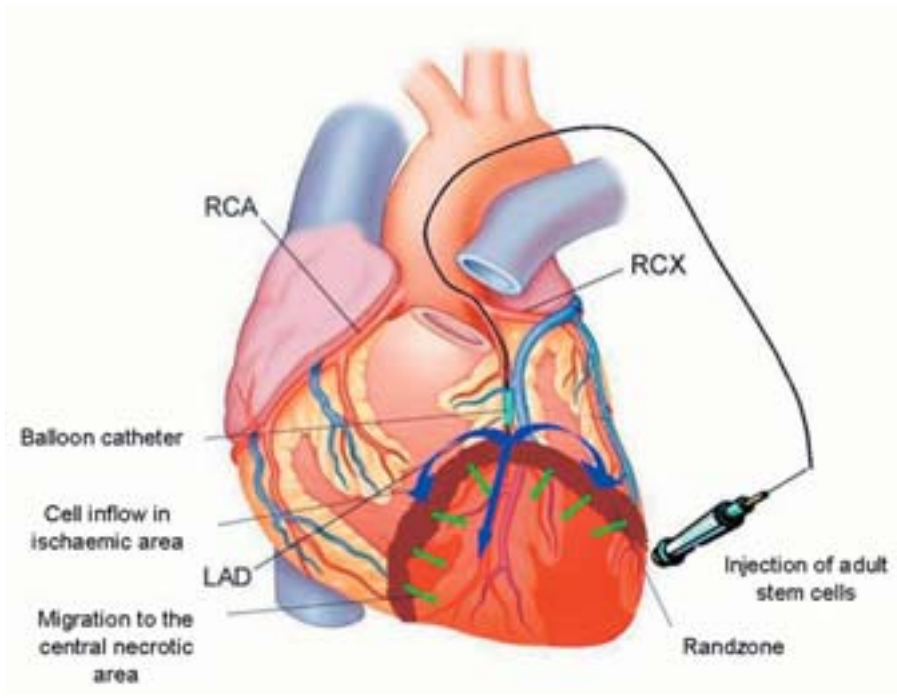


Fig. 1: Method for intracoronary stem cell transplantation: Site of the primary vascular occlusion caused by infarction is dilated with a balloon catheter and bone marrow stem cells are simultaneously and repeatedly injected into the ischaemic area or infarct. This is undertaken in the acute infarction stage (2–8 days after infarction) and in the chronic stage (up to 8 years subsequently). Injection total: 100 to 200 million bone marrow stem cells. Four to six pressure insufflations. Length of PTCA time: approx. 3–4 minutes

	Before cell therapy	After cell therapy	P
n = 50Pat.			
LV-Ejection fraction, %	55±10	63±11	<0.01
Stroke volume inex ml/m^2	48±18	53±17	0.05
EDV, ml	173±55	160±48	n.s.
EDV Index, ml/m^2	87±30	85±25	n.s.
ESV, ml	80±34	61±29	<0.005
ESV Index, ml/m^2	40±17	32±15	<0.005

Fig. 2: Test results from 50 patients with acute myocardial infarction – controlled studies. Before cell therapy i.e. on the 8–9th day after infarction, and three months after cell therapy

Ejection fraction

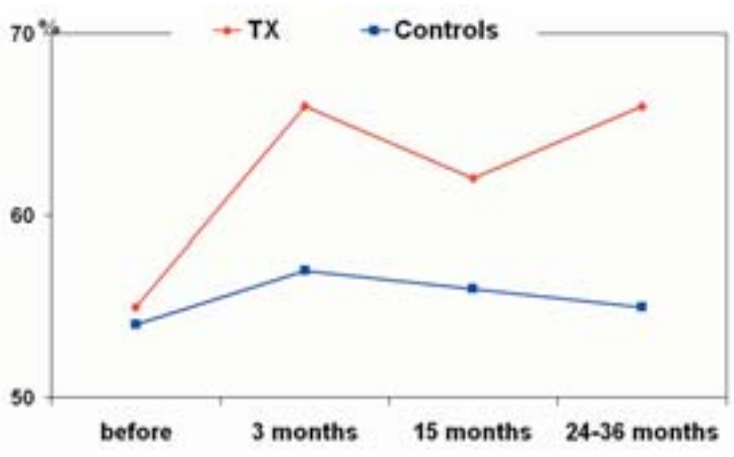


Fig. 3: Ejection fraction over a period up to three years after stem cell transplantation. Maintained improvement can be seen in patients who received stem cell treatment (TX)

Stem cell application

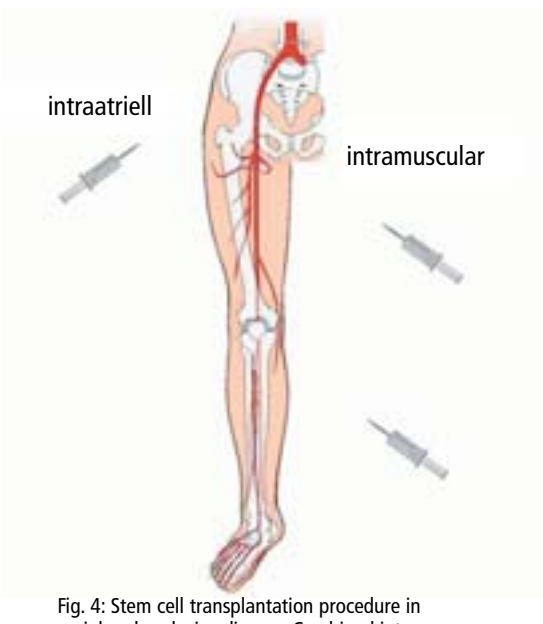


Fig. 4: Stem cell transplantation procedure in peripheral occlusive disease. Combined intra-arterial and intramuscular injection. For better migration, stem cells are injected after repeated compression using a cuff and ergometry loading

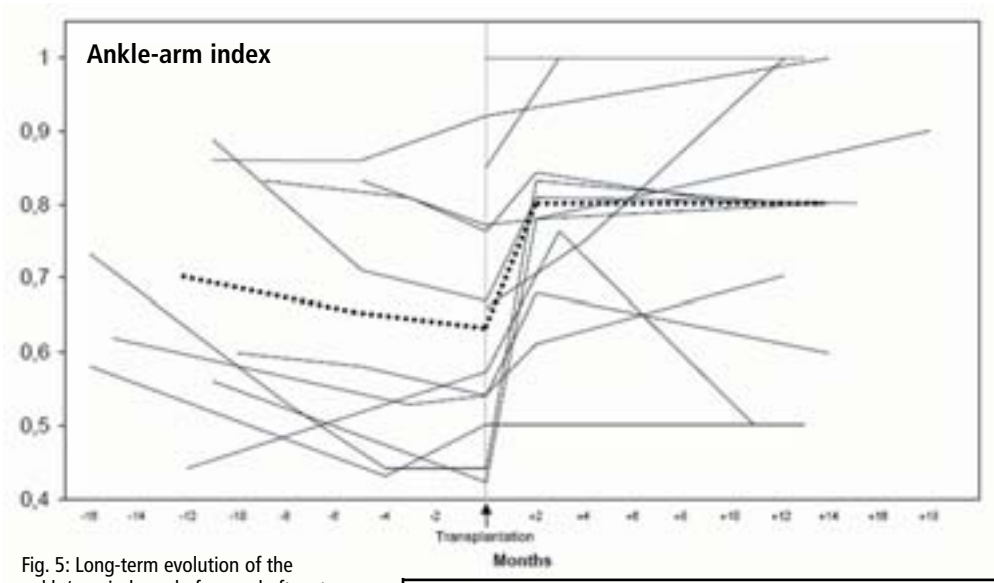


Fig. 5: Long-term evolution of the ankle/arm indexes before and after stem cell therapy. Improvement after six months averages up to 30%

The body itself contains naturally occurring, adult autologous stem cells, e.g. in the bone marrow. They are an ethical resource of cells that is completely safe. The idea was therefore to regenerate heart muscle clinically, by transplanting naturally occurring bone marrow stem cells into the infarcted region. This process was developed in Dusseldorf.

Bone marrow was removed and the cells prepared, then, after re-opening the infarcted vessel by balloon dilatation, they were injected into it under low pressure, using a balloon technique. The vessel was kept open with a catheter (a procedure lasting about 30 minutes), during which time two to three ml of a suspension of stem cells were injected into the infarcted region, a process repeated with four to six insufflations. The intervention was carried out on conscious patients with local anaesthesia, and at most produced mild pain at the site of injection.

Follow-up controls for three years and longer after the infarction show that long-lasting improvement in cardiac function has been achieved, with an average increase in cardiac function of 50% and a reduction in the size of the infarct of about 20%. At the same time, blood supply to the cardiac muscle has been considerably improved, as has metabolism, and physical strength has increased. As yet, no side effects have been reported, so the procedure should be considered an ethically safe treatment of muscle loss after infarction, and causal therapy that is really beneficial to the patient.

The Dusseldorf results have since been confirmed worldwide. Work groups in Frankfurt, Hanover and Rostock have been able to show, even in larger studies, that regeneration of infarcted cardiac muscle can be achieved by transplanting autologous bone marrow stem cells. What is important is that this myocardial regeneration, which, depending on study design, is between 4–16%, is of an order of magnitude that is at least as great as the sum of all therapeutic improvements in ventricular function achieved with balloon dilatation or stent implantation for cardiac infarction. Consequently, added improvement in patients' ventricular function can thus be achieved, on top of surgical intervention and drug treatment.

No complications from the stem cell treatment have been reported so far. There is no malignant degeneration as the cells used occur naturally in the body. No signs of inflammation have been observed, nor have disturbances to cardiac rhythm, angina pectoris or respiratory distress. Complications arising from the procedure itself are much the same as those that might occur in ordinary heart catheterisation procedures, and are insignificant.

It should be mentioned that a similar procedure is also effective in treating peripheral arterial disease. In this case, treatment involves intra-arterial and intramuscular injection of autologous bone marrow stem cells into the limbs affected, the therapy first practised by Bartsch et al. Ischaemic preconditioning, such as by compression induced with a cuff, or even ergometry, greatly promotes migration of stem cells into the muscles.

After three months there was marked improvement in the length of stride, the ankle/arm indexes, oxygen saturation and even venous occlusion plethysmography parameters. Consequently, autologous stem cell therapy can also be classed as a successful procedure for peripheral arterial occlusive disease, where symptoms are refractory to treatment, and in advanced stages of vascular disease.

Ready for action: The 17.5

The world's first portable, plug-and-play system to provide hours of emergency cardiopulmonary support is now on sale in Europe. *EH correspondent* ***Holger Zorn*** *reports*

The *Lifebridge B_2T* (bridge-to-transport) is the first, fully portable emergency life support system for patients suffering cardiogenic shock, or those showing signs of imminent cardiogenic shock. The machine ensures circulation and sufficient blood oxygenation can be restored in just minutes, thus preventing multi-organ failure leading to death. Whether in hospital or an ambulance, a patient can be connected to the Lifebridge to replace external cardiopulmonary reanimation.

First introduced in 2005 (see EH 3/2005), this equipment recently received a CE mark allowing sales across Europe. Its small size (61 x 45 x 37 cm), low weight (17.5 kg) and power supply via integrated battery make it ideal for ambulant use. The partly guided, partly automated set-up means that in five minutes it is ready for use by emergency doctors or paramedics – without needing a specialised technician.

To avoid air embolisms, seven security steps guarantee maximum patient protection. Access to the patient is either by percutaneous puncture and insertion of cannulae in vessels in the groin or, after thoracotomy, via insertion of central cannulae into the right atrium and rising aorta. Depending on the access, blood circulation of six litres per minute can be achieved, a volume that ensures adequate gas exchange and sufficient perfusion of all important organs.

The German Heart Institute in Berlin tested the Lifebridge during elective routine procedures in bypass surgery. The objective of those trials was to demonstrate the quality of the new, portable system compared with a traditional heart-lung-machine. The Lifebridge ran for up to 103 minutes (average: 82 minutes). Under conditions typically found in this kind of heart surgery, with complete cardiac arrest and no ventilation, the machine facilitated sufficient blood circulation to the organs and adequate gas exchange. Therefore, the Lifebridge also can be used pre-emptively during risky cardiac surgery (e.g. high-risk PCI).

At the launch a panel of experts discussed the merits of portability

In an earlier experimental study at the University of Cologne, cardiac surgery using the Lifebridge was simulated using pigs. The animals' blood gases were kept constant during the entire length of the study. The blood circulation remained constant even when the height difference between the machine and heart was changed. Injection of up to 100ml of venous air also did not reduce blood flow, and even the most disadvantageous conditions did not result in an arterial air embolism (source: Mehlhorn U et al., Ann Thorac Surg 2005; 80: 1887-92).

Gap in supply of technology for the treatment of cardiogenic shock can be filled

Annually, hundreds of thousands of Europeans suffer heart attacks,

STENTING

Platinum chromium alloy enhances design

Boston Scientific Corporation has commenced enrolment of a targeted 1,500 patients for the Taxus Perseus clinical trials, planned to take place in 100 international centres. The aim is to evaluate the firm's third-generation paclitaxel-eluting coronary stent - the *Taxus Element Stent*. This stent features the proprietary Platinum Chromium Alloy (designed specifically for stents) which, combined with a new stent design, is designed to allow thinner struts, increased flexibility, and a lower profile, while improving radial strength, recoil, and radiopacity, Boston Scientific reports, adding that the stent's platform incorporates new balloon technology, intended to improve on the firm's Maverick Balloon Catheter technology.

Dean J Kereiakes MD is principal investigator for the trials and Medical Director at The Christ Hospital Heart and Vascular Centre and The Lindner Research Centre, in Cincinnati. Louis A Cannon MD, of the Cardiac and Vascular Research Centre of Northern Michigan in Petoskey, is co-principal investigator.

Dr Kereiakes predicted: 'This new platform, designed for improved deliverability, should allow us to bring the long-term proven performance of the Taxus Stent to even the most complex and challenging anatomy.'

The first of the two-part study, called Taxus Perseus Workhorse, will evaluate the safety and efficacy of the TAXUS Element Stent compared with Boston Scientific's first generation drug-eluting stent (Taxus Express2). 1,264 patients with 'workhorse' lesions from 2.75 to 4.0 millimetres will be evaluated, with the primary endpoint of target lesion failure (TLF) at 12 months; its secondary endpoint is in-segment percent diameter stenosis at nine months.

The second part, the Taxus Perseus Small Vessel study, will compare the Taxus Element Stent with a historic control (the Taxus V de novo bare-metal Express Coronary Stent System). It will involve 224 patients with lesions from 2.25 up to 2.75 millimetres. The primary endpoint of the small vessel study is in-stent late loss at nine months, and its secondary endpoint is TLF at 12 months. Study success is dependent on both endpoints, Boston Scientific explains.

Hank Kucheman, Senior Vice President and Group President, Interventional Cardiology, said: 'The platinum chromium alloy and new balloon technologies in this system are also being developed in an Everolimus version and is intended to serve as foundational technology in Boston Scientific's dual-drug DES portfolio, including a drug-eluting bifurcation stent and next-generation Everolimus- and Paclitaxel-eluting stents.'

MONITORING

ATRIAL FIBRILLATION MONITORING

FIRST EUROPEAN AF PATIENTS RECEIVE LONG-TERM, CONTINUOUS MONITORING DEVICE

The Netherlands - The first implant of the Reveal XT, an insertable cardiac monitor made by US firm Medtronic, which recently received CE (Conformité Européenne) Mark, was carried out in June by Professor Karl-Heinz Kuck MD, at the Asklepios Klinik St. Georg in Hamburg, Germany.

Medtronic reports that this is the first insertable cardiac monitor to offer long-term and continuous monitoring of atrial fibrillation (AF): 'All other current monitoring tools are either for a limited period or on an intermittent basis. Long-term, continuous monitoring means that a clinician no longer needs to rely only on incomplete data to evaluate how AF may be progressing or treatment effectiveness,' the firm points out.

As is well known, treatment of AF is difficult because episodes often show no symptoms and can go unnoticed by patients. 'Atrial fibrillation is the most frequent cardiac arrhythmia. It is often accompanied by symptoms that are very unpleasant for the patient,' said Prof Kuck. 'Additionally, atrial fibrillation is linked with increased mortality and an increase in the incidence of stroke, by a factor of two- to seven-fold. However, with the new Reveal XT, atrial fibrillation can now be scrutinised over a period of three years with a subcutaneous monitor. This gives us totally new possibilities for monitoring and adjusting the treatment.'

During its three-year activity, the device is reported to monitor AF patients 24 hours a day.

Up till now there has been no method to gather detailed data, over an extended period, on the progression of AF and the effect of treatment. Reveal XT is expected to give new insight into patients' heart rhythms, which might help physicians to evaluate stroke risk and determine appropriate treatment and therapy options for their patients, Medtronic suggests.

Implantation

The Reveal XT is inserted just under the skin, and there is no need for wires or sticky pads to keep it in place. The patient is said to experience no restrictions in daily activities and, because cardiac data is recorded during the patient's normal routines the real-life information obtained could provide important insight to this condition.

The medical devices manufacturer Medtronic, Inc. (www.medtronic.com) is based in Minneapolis; its European office in the Netherlands.

New remote monitoring feature for implantable cardioverter-defibrillators (ICDs)

The company also recently launched a remote monitoring feature for ICDs, which have proved effective (98% of cases reported) in patients suffering recurring ventricular arrhythmias.

These patients have needed to have device check-up's two to four times annually, as well as unscheduled visits in critical situations, Medtronic points out, adding that its new CareLink Network system will enable home-monitoring, with internet-transmission of data from implanted cardiac devices. To do this, the patient holds a small antenna over the device and information on how their heart and ICD are working is transmitted to a secure physician website for a virtual checkup.

'This technology,' said Peter Steinmann, Medtronic's Vice-President for Western Europe, Cardiac Rhythm Disease Management, 'opens up the potential for more efficient chronic disease management and better outcomes.'

kg heart-lung machine

caused by the occlusion of coronary vessels following coronary heart disease. To avoid death or lasting damage a patient ideally needs to receive treatment within 'the golden hour'. However, according to data supplied by MITRA, Germany's heart attack register, in that country alone, the time lapse between heart attacks and start of treatment is on a continuous increase. Between 60,000 and 65,000 patients do not survive their heart attacks (source: Mark B et al., Dts Aerzteblatt 2006; 103: A 1378). Cardiogenic shock kills around 20,000 people. 'Up to 50% of those patients could survive if they received fast mechanical, extracorporeal circulation support,' points out Prof Zerkowski of Basel University, Switzerland.

Ideally, artificial circulatory support should begin during transfer to a specialised hospital, because vital vessels and organs need sufficient blood supply to avoid irreversible damage caused by hypoperfusion. However, mobile emergency systems are not usually used during a transfer, because currently available equipment does not meet requirements for portability and quick, safe use. 'Filling this gap in the supply is of utmost urgency,' said Prof Ruediger Lange, director of the Cardiovascular Surgery Department, German Heart Centre, Munich, during a symposium held during a market launch for Lifebridge. In specialist centres, heart-lung machines used during cardiac surgery must be set up and run by trained perfusionists. Their size and weight make them unsuitable for mobile use. A patient in cardiogenic shock, according to Lange, needs support for cardiovascular function by a lightweight, fast, easy to use machine, which can be used anywhere.

The situation for hospital treatment is similar. Cardiogenic shock develops in 7 – 10% of all infarctions, and it is unpredictable. In such an emergency, currently, doctors mainly use intra-aortic balloon pump counterpulsation (IABP), left-ventricular assist systems along with conventional heart-lung machines (HLM). However, the former can only be used if the heart muscle has remaining functionality. In the case of acute, complete cardiac arrest, the immediate use of a heart-lung machine is necessary.

Even ultra-modern, percutaneous heart-lung machines, which are connected to the patient's circulation via the iliac vessels during external cardiopulmonary reanimation, can only be used after 15–20 minutes. In addition, because they depend on manual operation, user errors and air embolisms cannot be eliminated.

Therefore, a fully-integrated 'click'n'run' heart-lung support system is an urgent requirement, said Prof Zerkowski.

Lifebridge Medizintechnik AG (founded: 1999) has found a market niche with Lifebridge B_2T. With 22 employees, the firm is supported by Bavarian financiers and an investment bank in the United Arab Emirates. It reports that there has already been strong demand from hospitals for this portable heart-lung device, and Manfred Salat, Chairman of the Board, predicts that, as from next year, the Lifebridge should be able to finance further growth internally.

Trial to raise awareness of gender and CVD

More women than men die of cardiovascular disease (CVD) every year, yet females receive only 33% of angioplasties, stents and bypass surgeries; 28% of implantable defibrillators, and 36% of open heart surgeries.

Looking at this situation, Abbott, which produces the Xience V Everolimus Eluting Coronary Stent System, is involved in a clinical trial - in Europe, Asia-Pacific, Canada and Latin America – to study the stent's safety and effectiveness in women patients who have untreated coronary artery lesions.

The first patient to enrol in the trial, called *Xience V Spirit Women*, has been operated on in Argentina, by Liliana Grinfeld MD, at the Italian Hospital in Buenos Aires, Argentina, who reported that the stent system had performed well, and that the patient will be checked for up to five years.

Abbott reports that the trial will focus on '…specific aspects of women's health in relation to coronary artery disease, such as general awareness about the disease, symptoms at time of presentation, referral patterns, and hormonal menopausal status.'

The trial's principal investigator, Marie-Claude Morice MD, at the Jaques Cartier Institute, in Massy, France, commented that it is 'tragic' that women amount to just 25% of participants in all heart-related research studies, and added that the trial had the potential to enhance access to CVD therapy by increasing their and their physicians' awareness.

A non-invasive measurement of arterial wall atherosclerosis

By Thaddeus Chodakauskas BS RDMS and Steve Feinstein MD FACC

Non-invasive ultrasound imaging techniques continue to provide a major role in diagnosis and management of patients with cardiovascular disease. The early presence of atherosclerosis predates major clinical events such as myocardial infarction and stroke. Over the last 17 years, the ultrasound-based measurement of carotid artery intima-media thickness (c-IMT) has become a standard for assessing arteriosclerosis and is recommended by the American Heart Association for the non-invasive assessment of cardiovascular risk.

Carotid intima-media thickness is defined as the distance between the lumen-intima interface and the media-adventitia interface, which corresponds to the inner and outer echogenic lines seen on the B-mode ultrasound image. (Fig.1). Measurement of c-IMT is traditionally performed with the image of the carotid artery in the longitudinal axis, revealing the common carotid artery, the carotid bifurcation, and the internal and external carotid arteries. Although these measurements have been performed for years, significant variability exists when measuring the near wall due to technical and acoustic difficulties encountered when imaging the c-IMT of the near wall.

Due to those technical limitations, clinical measurement of c-IMT using B-mode ultrasound is often applied to the far (posterior) wall of the common carotid artery. With the development of non-invasive imaging technologies, ultrasound methods can be used to reliably measure intima-media thickness (IMT). This measurement serves a non-invasive marker of arterial wall atherosclerotic disease. Studies have found that, on average, based on gender and age, the intima-media thickness will increase 0.01-0.03mm per year. (See tables on historical clinical studies of c-IMT).

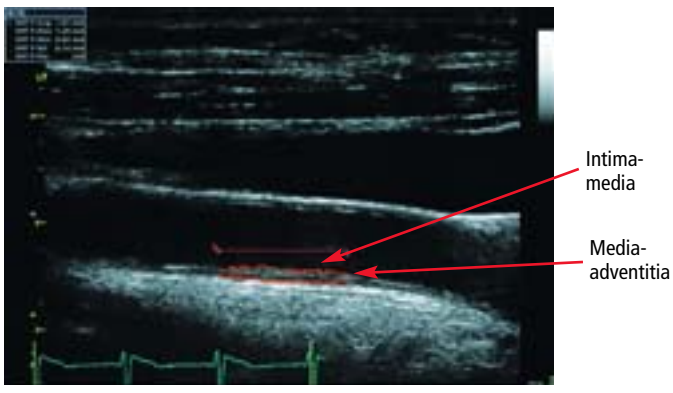


Figure 1: Intima-media wall thickness

Intima-media

To perform these studies, radiographers/clinicians use high frequency (7, 10 or 12) MHz linear array transducers with the Vivid 7 Dimension and the Vivid i to efficiently acquire multiple c-IMT measurements within seconds. The semi-automated measurement for intima-media wall is simple, easy and takes less than four steps. The physician receives immediate results, which consist of these parameters: maximum, mean, average and number of data points examined. Using the software application, the c-IMT measurement can be exported directly to a worksheet and report page and, subsequently, placed in the patient's medical record.

Tips: c-IMT measurements for the Vivid 7 Dimension/Vivid i

Imaging common carotid artery

- Maximise the depth selection and optimise the gain settings to visualise the posterior intima-media wall of the common carotid artery.
- Attempt to capture the common carotid artery with the jugular vein to improve visualisation of the anterior and posterior carotid walls.

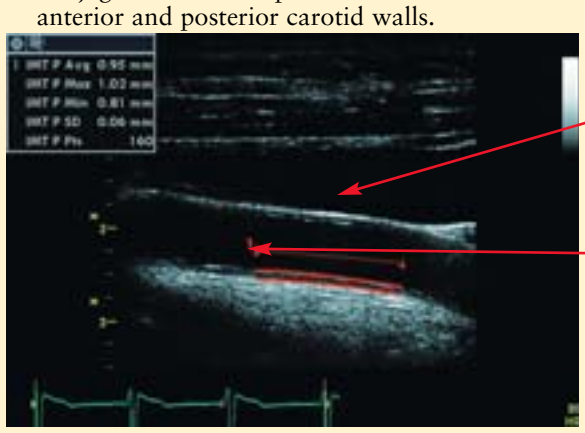


Figure 2: 50-60 data points

Measuring c-IMT

- Identify a single frame during the end-diastolic phase between the P and Q wave off the ECG trace.

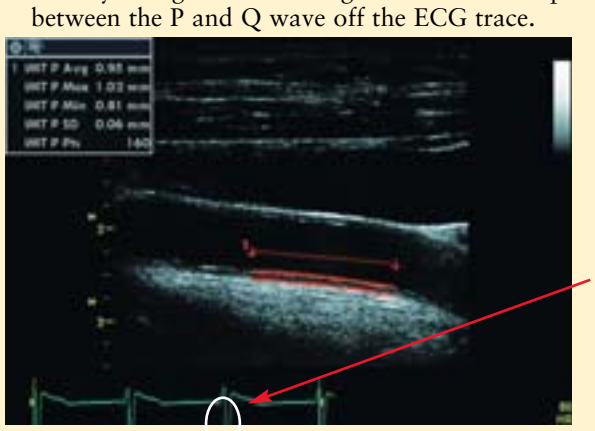


Figure 3

- Approximately 50-60 data points is an adequate sample when used to measure the intima-media thickness.

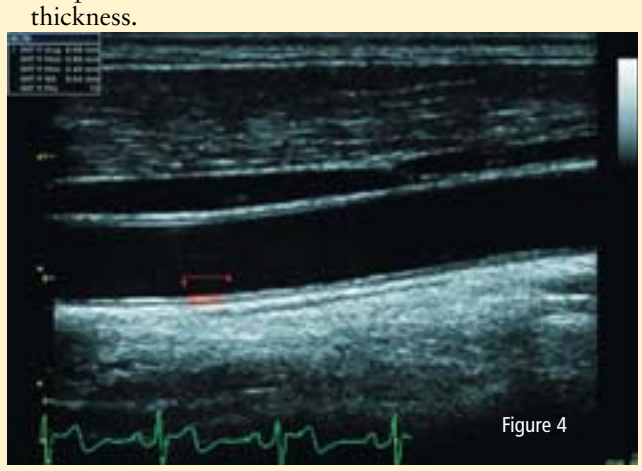


Figure 4

Performing IMT measurement on the Vivid 7 and Vivid i:

- Select Measurement key on the keyboard.
- Select from the measurement menu carotid folder, then CCA IMT, to identify the right or left carotid artery, then CCA IMT Post, for posterior wall.
- Position the IMT cursor above the intimated wall, then press select key to anchor the first cursor. Reposition the second cursor using the trackball then press select key to anchor the second cursor.

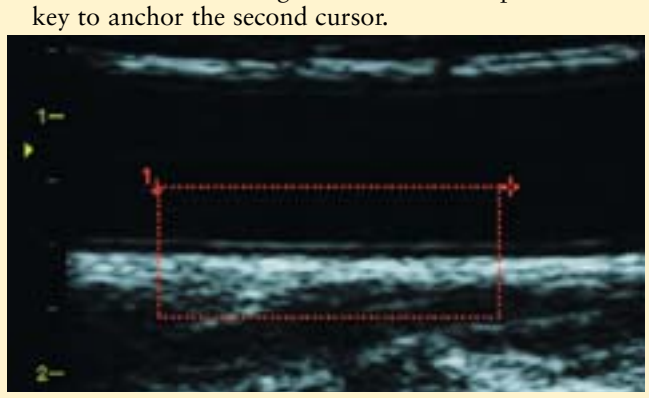


Figure 5

If the IMT measurement result is acceptable, select 'Transfer' in the measurement Carotid folder. The results will be displayed in the worksheet and in the final report.

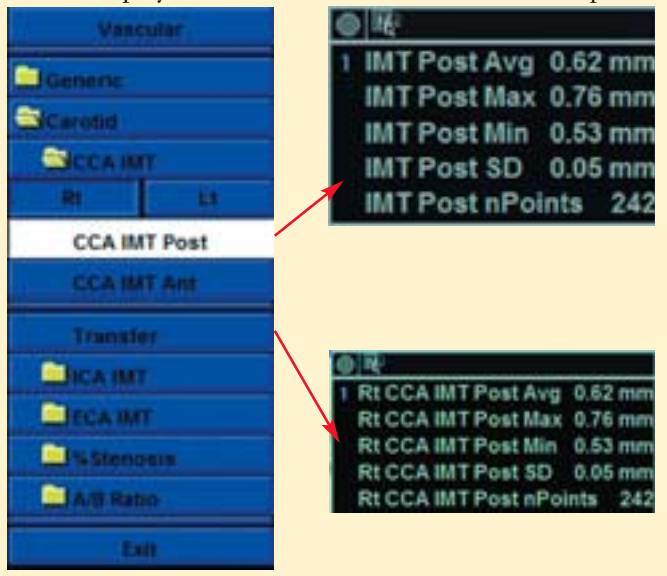


Figure 6

The automated IMT package from Vivid 7/Vivid i: the benefits

- The measurement procedure is not operator dependent and not as time intensive compared with manual IMT measurements.
- The semi-automated technique simplifies the time taken to perform the measurement compared with manual measurement.
- The improved technology enhances c-IMT precision measurements and increases consistency and reliability of the results.
- The methodology is robust, reproducible and builds confidence among radiographers and physicians.

TWA predicts mortality in patients with normal ejection fraction

Dr Tuomo Nieminen, Tampere University Hospital

Finland - An increased TWA (T-wave alternans) is a significant indicator of all-cause and cardiovascular mortality, as well as of sudden cardiac death in patients with mostly normal ejection fraction, according to a recently published study by researchers led by **Dr Tuomo Nieminen**. Until now, this was only known as an indicator for those patients suffering severe heart diseases predisposing to life-threatening arrhythmias. In an interview with *Meike Lerner*, of *European Hospital*, Dr Nieminen explained the advantages of the TWA measurement, study results and the consequences these have for future research.

'The T-wave represents the electric repolarisation of the heart,' Dr Nieminen explained. 'Thus, alternans in the T-wave is a marker of an alternating repolarisation process, which might indicate cellular disturbances during repolarisation. This is important, since pathological repolarisation phase predisposes to ventricular arrhythmias. In general, the TWA measurement could be used for arrhythmic risk stratification, but it is also one of the diagnostic criteria for long QT interval syndrome, another repolarisation abnormality.

TWA can be measured with a regular electrocardiogram; no extra examinations are necessary. The possibility to measure the T-wave alternans is a special feature within normal ECG software.

There are two methods for TWA assessment: time-domain modified moving average (MMA) and spectral methods. Both methods seem to measure the same phenomenom. For our study, we used the GE Healthcare software embedded with the MMA method, which can be applied in routine exercise test protocol without stabilising the heart rate to any specific level.'

Several studies have proved the effectiveness of measuring TWA for prognoses. What makes this study different?

'Essentially all previous studies included patients with an ejection fraction of less than 50 percent, which is called abnormal. But in our population this only refers to 13 percent of the patients.

In 2001, we launched the *Finnish Cardiovascular Study* (FINCAVAS), in which we enrol all volunteering patients performing a clinical exercise test at Tampere University Hospital. We use the standard protocols of the bicycle ergometer test, with an increasing load every minute. This TWA analysis aimed to test whether TWA predicts mortality in our study population. The results of the study show that the TWA measurement provides prognostic value also in patients with a normal ejection fraction.'

What consequences do these findings have for patients' treatment?

'Our results suggest that TWA identifies patients prone to sudden cardiac death at an earlier stage of cardiac disease than supposed before. It is the first but naturally important step to show that a certain marker is associated with mortality. Another equally important step will be to test whether the patients with such a pathological marker will benefit from treatment options, such as anti-arrhythmogenic pharmaceuticals, or an ICD implant. The results of our study did not answer that latter part, which is a big question for the future - studies are being planned and conducted to reach that goal.

We need to bear in mind that estimating the aggregate risk for sudden cardiac death should be based on several parameters. No single marker will suffice, but TWA seems to be a very good candidate to be involved!'

The high risk plaque initiative
THE BASIC STUDY

This will take place in two mobile units, located in a number of large cities in the USA. The design of the study and the protocol development is being formulated in a close collaboration with BG Medicine, which will develop the blood-based biomarkers, and with leaders in vulnerable plaque research from leading Universities in the USA, Denmark and the Netherlands, as well as with partners Merck and Astra Zeneca.

The first patients will be scanned in the autumn of 2007, and the complete bio-imaging study will take about one year. While the complete set of imaging data will be ready in more than a year - the study will take about four years.

Molecular medicine

A weapon to beat high-risk plaque

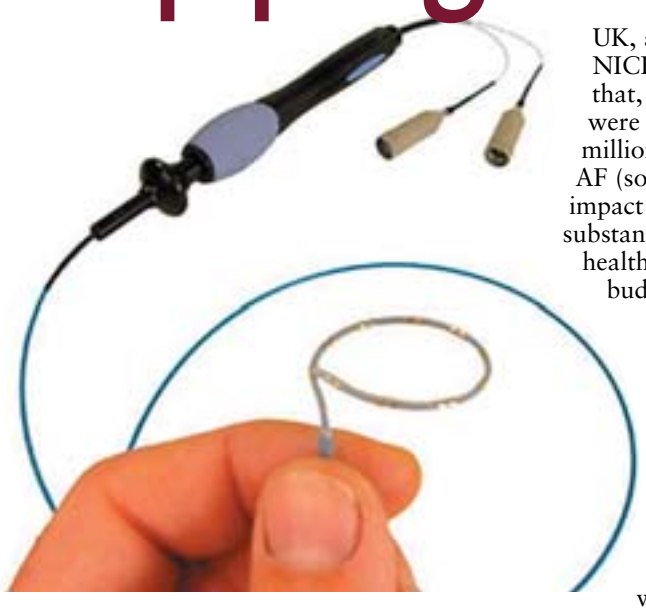

Paul Smit

It has only recently been discovered that very often it is not the size of the plaque in the coronary vessels but its inflammation status that determines the occurrence of a cardiac infarction. This knowledge triggered new research approaches for its early diagnosis and treatment in cardiology – for example the *High-Risk Plaque Initiative* jointly founded by Philips Medizin Systeme, AstraZeneca, Merck & Co, BG Medicine and Humana, which focuses on the possibilities that molecular medicine now offers. The researchers are trying to identify suitable biomarkers that allow the early diagnosis and targeted therapy of inflamed, so-called high-risk, plaque.

In molecular medicine, the High-Risk Plaque Initiative is one of the most important projects of Philips Medizin Systeme, as Paul Smit, in charge of strategy and development in the Dutch company, explained: 'Today, high-risk plaque is recognised as the major cause of cardiac infarction which kills about 50 percent of the patients. This means, in many cases, death is the first symptom of the disease. Furthermore, those patients who survive the event are chronically ill and require medical care for the rest of their lives. This disease is not only dangerous for the patients but also presents an immense financial burden on the healthcare system – a burden that will increase steadily over the next few years. In short, high-risk plaque is one of the most fatal and one of the most expensive diseases.'

In addition, coronary plaque is a highly unpredictable condition because, depending on the degree of inflammation, the plaque suddenly ruptures and causes an embolism, which in turn leads to

Cardiologists meet to sum up progress



Czech Republic – During a meeting of cardiologists in Prague earlier this year to exchange experiences with new methods and treatments to control atrial fibrillation, Dr Josef Kautzner, Head of Cardiology Department at IKEM (Institute of Clinical and Experimental Medicine) pointed out that numbers of patients with AF will more than double during the next 20 years. In the Czech Republic alone, there are about 120 thousand people diagnosed with AF. All these patients have worsened quality of life, twice the mortality due to cardiac failure, and a five times greater risk of cerebral vascular accident (CVA) when compared with the normal population of the same age. AF also causes about a fourth of all CVAs, which means around five thousand people are afflicted by this disease.

The annual treatment of one patient is 40 thousand CZK, i.e. almost 5 billion CZK (178.5 million EUR). Figures for the UK, according to the NICE guidance, indicate that, in July 2006, there were more than 1.4 million UK patients with AF (source: NICE cost impact report) consuming substantial part of healthcare financial budget.

The main goals of AF treatment are widely recognised – to renew normal cardiac rhythm, and to ensure that AF doesn't occur again.

Therapeutic modalities are wide, apart from anti-arrhythmics, modern mini-invasive methods are recently on the rise – cardiostimulators and cardioverters and defibrillators, electric cardioversion and particularly catheter ablation.

In the Czech Republic, the first patient with an implanted cardiostimulator was seen at IKEM back in 1962, and the first digital cardiostimulator was implanted in 2003 in Prague's Na Homolce Hospital. Catheter ablation as an AF treatment has been in use for quite some time.

With new medical technology achievements, three-dimensional imaging has arrived in this scene. New diagnostic approaches allow 3-D views inside of the heart, so cardiologists can combine that imaging technique with a cardiac CT scan, and navigate the catheter through the heart with a full stereometric view.

One of the pioneers in the field of even more advanced medical techniques is London's St. Mary's Hospital (see robot feature on this page).

Report: ***Rostislav Kuklik***

Robot moves steadily in on catheter ablation

Sensei Robotic Catheter System installed in London

The *Sensei Robotic Catheter System*, a first generation robotic platform launched by Hansen Medical at the USA's *Heart Rhythm Society* Scientific Sessions in May this year, is in use in Europe. St Mary's Hospital, in Paddington, central London, became the World's first centre of excellence for training in and development of the system, under the guidance of consultant cardiologist and electrophysiologist **Wyn Davies MD FRCP FHRS**. As of July, over 20 atrial fibrillation patients had been operated on at St Mary's using this robotic surgical aid controlled by the surgeon at a nearby workstation.

The Sensei system and Artisan catheter aim to enable physicians to easily and accurately place mapping catheters in hard-to-reach anatomical locations within the heart with stability, during the diagnostic phase of complex cardiac arrhythmia treatment, Hansen reports.

'The new robotic system allows the operator to perform EP procedures in a more consistent fashion, which I believe will lead to the development of a standard approach for complex diseases,' Wyn Davies observed.

Currently, the majority of clinicians manually guide catheters through the heart to detect and treat a variety of cardiac arrhythmias. This technique requires physicians to perform a series of complex manipulations at one end of the catheter without assurance that the tip of the catheter will respond as desired when inside a patient's heart. Achieving stable contact at anatomic sites within the heart, which is essential for successful mapping procedures, can be difficult, Hansen points out. 'As a result, insufficient contact between the catheter tip and the inside of the heart wall can lead to highly variable and less than optimal procedure results for the patient. Hansen Medical believes its robotic platform overcomes these hurdles and will enable physicians to perform procedures that historically have been too difficult or time consuming to accomplish routinely with existing manual technique.'


Electrophysicist Wyn Davies at the Sensei workstation

St Mary's NHS Trust, which was awarded a 'good' performance in the 2006 NHS performance ratings, has 3,600 staff that provides specialist care for women's health, cardiology, children's services, infection and immunity and robotic surgery. The Trust reports that it has one of the lowest mortality rates in the UK, and a 'rich history of research, development and teaching thriving today through the relationship with internationally renowned university partner, Imperial College London'.

Dr Wyn Davies set up the electrophysics department at St Mary's and also has been praised by the British Medical Association for initiating a 'day return' cardiac treatment service in 2001. With this service, patients receive treatment during a day and return to their local hospital that evening. This has shortened waiting times for beds to become vacant for their potentially life-saving operations. In addition, he pointed out that returning to their local hospitals mean relatives and friends can visit more easily.

The system

The Sensei system is compatible with fluoroscopy, ultrasound, 3-D surface map and patient electrocardiogram data. The two main components that comprise the system are the Artisan control catheter and an ergonomically designed, remotely-placed workstation where the physician sits throughout the procedure. In addition to lessening operator fatigue, the remote workstation creates a virtual shield for physicians against harmful radiation, Hansen added. 'The open architecture provided by the Sensei system, which allows the use of pre-approved catheters from third-party manufacturers, requires a labelling addition from the FDA. The addition is intended to remind physicians that the safety and effectiveness of the system for use with cardiac ablation catheters in the treatment of cardiac arrhythmias, including atrial fibrillation, have not been established. The Sensei system has received CE mark approval in Europe, and the Artisan Control Catheter is currently pending CE mark approval.'

For many patients, a catheter ablation is the most effective way of treating AF; however a shortage of clinicians able to perform these complex procedures contributes to thousands living with the condition and its associated risks. In the UK alone, over 50,000 people develop AF annually, yet fewer than 10% undergo catheter ablation.

St Mary's, which runs one of the UK's busiest cardiac centres, is now one of only four hospitals globally that are using the Sensei robot. Wyn Davies said it has

a cardiac infarction, or a stroke. This sudden rupture of inflamed plaque in a coronary artery explains why 70–75% of cardiac infarctions occur without prior symptoms.

'Hitherto physicians were unable to determine when the plaque has reached a dangerous stage. Today, molecular medicine offers the possibility to identify indicators of the inflammation. The first task of the High-Risk Plaque Initiative is to develop a broad patient screening concept, which we hope will show early indicators in patients with infarcts that are not present in the control group. If we know these early indicators, or biomarkers, which predict an inflammation, thanks to modern imaging methods we will be able to locate the high-risk plaque and determine its volume,' Paul Smit pointed out.

The collected data can be combined with statistical values and thus provide valuable information on the patient's current and future risk. Currently, Philips and the other members of the High-Risk Plaque Initiative are developing a test that will be applied to more than 6,000 patients in coming years.

Early diagnosis of high-risk plaque is no doubt a major step forward. However, it has to lead to targeted therapies for the affected coronary vessels. Today, physicians are rather powerless when it comes to the treatment of plaque, since there are no validated tests to determine the effectiveness of drugs. However, it appears to be proven that regular monitoring and a healthy lifestyle often improve a patient's condition.

Molecular medicine offers promising approaches for other diseases as well - cancer, for example. Currently, methods are being researched that use ultrasound to transport medication through the vessels right to the affected body region. The medication is docked onto micro-bubbles, or a contrast agent, and injected in to the body. With the help of ultrasound signals the physician can trace the bubbles' route to the target region. As soon as the bubbles reach the affected tissue a certain ultrasound frequency causes them to burst and the active agent is released. Because the medication is administered in a very targeted way, a much lower dose than in a systemic therapy is required – which increases the therapeutic success and significantly reduces side effects. The principle has already been tested in pre-clinical trials and is now being developed for clinical use in a joint effort with the pharmaceutical industry. The Philips research team has already gone one step further and is working on finding out whether this innovative method can be used for cardiac diseases.

'We are still in the early stage of research into validated biomarkers and it will take about four more years before we will be able to identify high-risk plaque with the help of biomarkers. However,' Paul Smit concluded optimistically, 'these developments will open entirely new possibilities from which both the patients and the healthcare system will profit: Early diagnosis can significantly reduce treatment and follow-up costs of many diseases.'

*Report: **Meike Lerner***

'enormous potential to help deliver difficult catheter ablation procedures'. Pointing to the shortage of expertise in the UK, which means there are too few centres where highly complex cases can be carried out, he added: 'With further development that we are already embarking on, this robot will enable complex procedures to be carried out almost automatically, increasing the opportunities to treat more patients and ultimately reducing clinical risk. The robot allows accuracy and control of catheter movement which cannot currently be achieved without a skill level that usually takes considerable time to acquire. We are thrilled that St Mary's cardiology unit has been able to pioneer this exciting advance. With the other surgical robotic programmes already established at the hospital, St. Mary's is a world leader in robotic medicine.'

Although capable of use in all forms of ablation procedures, Hansen reports that the robot will predominately be used for complex ablation procedures to treat atrial fibrillation.

The Czech Republic and Germany

Another chosen centre of excellence is the Cleveland Clinic Foundation in Ohio, where the system is being used under the guidance of Andrea Natale MD, who is director for the Centre for Atrial Fibrillation, director of the Electrophysiology Laboratories and head of the Section of Pacing and Electrophysiology there. She had used the Sensei system during clinical evaluation on 25 patients in the Czech Republic and Germany. 'The stability of the Artisan catheter allowed us to perform catheter mapping procedures more efficiently and effectively,' Dr Natale said. 'The incorporation of the Sensei system and catheter did not add time to the procedures, nor did it require increased radiation time, as would normally be expected with new technology. As a result, I'd expect this new system to become the medical standard for performing complex EP procedures, which are currently limited to those individuals with the highest level of skill.'

Report: Brenda Marsh

MEDICA®

39th World Forum for Medicine

International Trade Fair with Congress

www.medica.de

Düsseldorf, Germany

14–17 November 2007

Messe Düsseldorf GmbH
Postfach 10 10 06
40001 Düsseldorf
Germany
Tel. +49 (0) 2 11/45 60-0 1
Fax +49 (0) 2 11/45 60-6 68
www.messe-duesseldorf.de

Messe Düsseldorf

Anyone who's somebody in medical manufacturing heads for the MEDICA trade fair held annually in Germany with 4,200 exhibitors from 65 countries at the show, as well as 320 more at Compamed, which runs alongside MEDICA to present manufacturers with everything from new materials, components, pre-products, packaging and services to complex micro systems and state of the art nanotechnology.

Similarly medical professionals and those in hospital procurement flock to this, the biggest event of its kind internationally, to keep abreast of innovations and take a hands-on approach. Last year these visitors numbered 137,000.

Again this year MEDICA will hold a sharp focus on networks and communication. For example, members of ZVEI - the association of the German electrical and electronics industry – will present light signalling solutions. Bluetooth SIG, a co-operation project of high-tech companies that include Nokia, Intel, Microsoft and Toshiba, will highlight application possibilities of Bluetooth technology in healthcare institutions.

Highlighting advances in teleradiology also will continue, as will telecommunication between doctors and patients, particularly the chronically ill.

All this, and more innovations for in- and out-patient care, including electro medicine and medical technology, laboratory technology and diagnostics, pharmaceuticals, physiotherapy, textiles, medical furniture and equipment, will be on show.

Among the forums, e.g. MEDICA MEDIA and MEDICA MEET IT, the Physiotherapy Forum is likely to attract physiotherapists in droves.

Not to be missed!

MEDICA & Compamed 2007

14 –17 NOVEMBER 2007

COMPAMED

Compamed 2007 – the trend is ever smaller

Microtechnology and nanomedicine enable ever smaller and more mobile solutions in medical technology. Moreover, the show's organisers point out, telemetrics in product development is here to stay. They cite implantology as an example. 'In the future, implants will be fitted with acceleration sensors and a telemetrics module that detect sub-optimal positioning. Such innovative sensor technology may also act as quality assurance for implanted hips and knees as it helps to recognise unfavourable implants and thus avoid radiation exposure during X-rays.'

'Smart Fabrics and Interactive Textiles'(SFIT)

European Hospital has featured some of these developments in previous issues, and it's worth noting that, in 2006, this market was already worth $340 million. The general concept is to develop 'e-textiles', which can integrate sensors, actuators, communication devices and power generation devices. Designed as shirts or jackets, a wearer could be permanently monitored for medical purposes (e.g. blood pressure, blood/oxygen saturation, sweating, skin temperature, heart rhythm). Because the electronic devices will be worn in direct contact with the body, highly flexible systems must be developed to stretch as well as follow and react to body movements.

New materials and new applications for existing materials

Synthetic materials can be used to create high precision compounds at a reasonable cost and even simple materials, e.g. polyethylene or poly-propylene, are being shaped into sophisticated products. So medical devices are increasingly made in synthetic compounds, e.g. the inhalators through which patients can inhale several active ingredients, and so do not need injections.

Most DICOM-CDs do not meet standards

Germany – 74% of DICOM-CDs from 87 different manufacturers do not comply with current standards, according to a joint study by OFFIS (Oldenburger Forschungs- und Entwicklungsinstitut für Informatik-Werkzeuge und -Systeme) and the Deutsche Röntgengesellschaft (DRG), presented at the recent 9th HIS-RIS-PACS and DICOM Meeting*. Five percent of the CDs were also found to be defective and, of the remaining 21%, less than half met the requirements for DICOM-CDs. 'Most problems are caused by non-compliance with file or path naming conventions and by missing attributes,' Michael Onken of OFFIS explained.

At the event experts familiar with hospital and general practitioner (GP) working needs looked at software systems from various perspectives – in particular the challenge of data exchange. This not only means online, but also via CD exchange, all of which present enormous obstacles.

Physicist and radiologist Dr Reinhard Loose, of the Institute for Diagnostic and Interventional Radiology in the 1,100-bed North Nuremburg Hospital, surprised the audience - and particularly manufacturers' representatives - when he said that PACS is not an enterprise-critical application there. 'A discussion with 40 clinical department heads of our hospital indicated that a PACS failure in no way impedes clinical workflows,' he said, and explained that all imaging specialists there use local buffer stores, where all data can be stored for several days. Distribution of images to individual departments and wards is ensured by a dedicated web server. Rather than investing in expensive SAN (Storage Area Network), NAS (Network Attached Storage) or CAS (Content Addressed Storage) solutions, the physicist and radiologist recommends purchasing two inexpensive RAID systems, each of which proves uptime of 97%. Mathematically this solution offers a total system stability of 99.91%, he added, making the popular and expensive 24/7 full-service contracts entirely obsolete.

A further issue are the unclear legal implications of compressing and storing angiography data from multi-slice CT. In addition, they discussed the transmission of slices of sub-millimetre thickness that requires immense bandwidth and unnecessarily prolongs workflow.

The integration of non-DICOM images in to PACS made another focal point. Internists, dermatologists, ophthalmologists can now see the value of digital archives so would like to store their images in PACS, for assignation to an electronic patient record (EPR). Whilst in Germany this is still being discussed, other European users have progressed – e.g. the Son Llatzer Hospital in Palma de Mallorca, Balearics, has found an impressive solution for multi-media patient files based on a PACS.

Up to 230 participants discussed IT solutions at tis year's venue: Schloss Waldthausen near Mainz

** The meeting was organised by the working group @GIT of the Deutsche Röntgengesellschaft (DRG) with the co-operation of the Akademie für Fort- und Weiterbildung in der Radiologie (a further education school for radiology), and supported by IHE Deutschland, OFFIS and the Johannes-Gutenberg University in Mainz.*

IT FOR ISTANBUL

Turkey - The recently opened 74-bed Florence Nightingale Kiziltoprak Hospital, which has three operating rooms and 10 ICU beds, is one of four hospitals in a Turkish healthcare network. GE Healthcare reports that it has equipped the hospital's radiology department with the firm's diagnostic imaging products 3T MR Signa HD and the LightSpeed VCT, as well as mammography and ultrasound systems.

To manage the massive increase of radiology patient data and images the brand-new hospital has also adopted GE's Centricity RIS/PACS. 'The system provides ultra-fast image display and storage, extended 3-D review possibilities, a speech recognition system and online-dashboards, resulting in seamless workflow and faster treatments,' GE points out.

With a total 13 Centricity RIS/PACS workstations, Dr Mustafa Sirvanci, in the Radiology Department, said that images from the Florence Nightingale can now be shared remotely via the web, as and where required, with other hospitals within the network.

Recently, as a result of the acquisition of Kodak's Health Group by Onex Corporation, Carestream Health Inc. began operations as one of the world's leading independent health imaging and IT solutions companies. We asked **Kevin J Hobert**, CEO of Carestream Health, about this and its effects on his company's operations

ACQUISITION

Kevin Hobert

Health imaging and IT solutions firm predicts greater flexibility

'Onex finds good companies in attractive markets - and they help the companies grow through internal investment and by providing access to funding and expert guidance on mergers and acquisitions and partnerships,' Kevin Hobert explained. 'This is their core capability. So, with Onex, we now have more flexibility and more opportunity. We can now meaningfully compliment our portfolio in ways that are sometimes hard to do when you are part of a large public corporation.

Onex has been working with us to expand and refine our strategy, to build on our great products and services and our customer relationships and grow even faster. I can't go into all of the specifics, but the Onex team is a very smart group of people with a lot of good ideas. The acquisition has been a great fit for our team.

Our change to an independent company does not change our fundamental approach to serving our customers, but when they have unmet needs or new ideas, it gives us a few more ways that we can go about satisfying those needs and delighting our customers. We have been working on a number of very creative ideas that will provide outstanding solutions for our customers. Some of these ideas are things we just wouldn't have been able to do in the past.

Carestream Health is', he said, 'fundamentally changing its portfolio. Our solutions help our customers to dramatically improve the cost and quality of care through the transformation from film and paper to an all-digital workflow. And within this area we have been, and will be, pursuing a number of innovations. For example, new X-ray detection technology to dramatically improve the way our customers replace film, new process capability and new consulting solutions that are enabled by the technology we provide, and innovative new clinical tools. We have also been investing areas such as image processing and rendering to provide dramatic advancement in workflow and quality. These investments will result in innovative products in the years to come.

Film, now and tomorrow

We want to lead our customers from film and paper to an all-digital workflow and help them improve their quality and cost through that transition,' Kevin Hobert pointed out. However, he added that film is still very important to the firm. 'Film is a great business and provides great cash flow that allows us to invest very aggressively in our digital businesses. Globally, our relationships with our film customers provide us with a great starting point, because these are the customers that we're helping through the transition. Our history in film means that as we bring innovative new solutions to the market we build on relationships, that have been cultivated for the last 110 years, with tens of thousands of customers around the world. Very few companies have the global presence that enables a large investment in product development. In our case nearly two thirds of our revenue comes from outside the US, which is proportional to the global market opportunity.

Our film business also has great material science and coating assets, and a great team – the people who built the medical film business – and this team and these technologies can serve other industries. Our team has already begun coating products for people in other industries, which also provides a new area of growth for us. I'm sure we'll be able to continue to provide outstanding film at a reasonable cost, because our team and our manufacturing assets are fully utilised.'

Asked when he thinks hospitals will become fully digital, he pointed out that, in some, it is already happening. 'Around the world it will take quite a bit of time to really get the full benefits of being all-digital,' he added. 'Taking all of the data across the enterprise and turning it into clinically useful information and insights that help inform clinicians and drive decisions will happen very gradually, over time. But it is very exciting.

Western Europe and the United States are definitely at the forefront of the implementation of digital technology - I think Europe more so at an enterprise level, or country level. Having nationally managed healthcare gives many European countries a great opportunity to get some of the broader community benefits of digital healthcare. But some developing countries are also making major investments in technology and, by building on the experience of more developed countries, are delivering care more effectively to rural markets. We are seeing innovation all around the world.'

Molecular imaging

'Our growth this year has been strong, particularly on the digital side of molecular imaging; we not only provide films and phosphors, but also digital imaging systems and imaging agents – an area that is growing very rapidly. This year we introduced a number of high end in-vivo imaging systems, and these are multi-modality imaging systems with integrated X-ray, radio-isotopic and optical imaging. We focus on optical molecular imaging and provide full solutions that include both the imaging system and the imaging agents.

We are building on more than 50 years of dye, chemistry and nanotechnology experience gained from manipulating very, very small particles used in film formulations. As a result we offer non-cytotoxic probes with superior brightness and photo stability. Our experience working with these small particles has allowed us to develop probes that are small and uniform and have unique surface structures - and that don't damage the body in any way. So, our imaging agents can translate very rapidly from research to clinical use. This is all part of our imaging heritage. We have fantastic intellectual property and have been able to bring these very powerful probes to market very quickly and offer solutions with probe, dye and imaging system together. We've had good success with research institutions internationally, and with research departments within pharmaceutical companies.

With our optical molecular imaging product, a pharmaceutical company can see immediately whether or not a therapy they're delivering is having an effect. Rather than, in the case of tumour treatment, waiting weeks or months to detect a difference in tumour size, a researcher can see immediately, at cellular level, whether or not a treatment is effective. This really streamlines drug development and clinical trials. And again, the great thing about our technology is that it translates from clinical studies into clinical use.

We couldn't be more excited about our future,' Hobert concluded. 'We now have an incredible opportunity to build on our history of innovation and to invest in our future and grow our business.'

Left: Professor Wilfried von Eiff, Managing Director of the Centre for Hospital Management (CKM) and Director of the Hospital Management Institute (IKM) at Munster University
Centre: Andreas Hagen MBA, owner of dreiH Consulting (www.dreiH.com), which advises on modern quality management, integrated risk management and innovative technologies (e.g. RFID). He is also project manager and in-house consultant for process and IT optimisation for the METRO Group
Right: Alexander Prangenberg, Project Manager at CKM and research associate at IKM

HOSPITAL SECURITY

AN INTERNATIONAL STUDY TO EVALUATE RADIO-FREQUENCY IDENTIFICATION

Preliminary results from an international study to evaluate the use of radio-frequency identification (RFID) as a hospital risk management tool in medical care, have become available from the study leaders at the Hospital Management Centre, Munster University, and dreiH Consulting, based in Mainz, Germany.

Andreus Hagen, owner of dreiH, who based his masters thesis at Munster University on this subject, describes radio frequency identification (RFID) as '…an auto-ID process that allows automatic and contactless identification of objects and persons. RFID systems are made up of a transponder, a read/write device and a back-end software application. Unlike a barcode – which can only be read out by an electronic device upon visual recognition of the code – a RFID system calls up data from a transponder, or written to a transponder, without visual or physical contact. Depending on the frequency, the transponder, the read/write device and other specifications, the read/write process can bridge a distance from a few millimetres to several metres.'

RFID applications in healthcare could include the identification of people, equipment and medical devices, pharmaceuticals and laboratory samples, blood, etc, he points out. An analysis of the current use of 161 installations of RFID applications in the healthcare sector, by consultancy firm IDTechEx has shown that RFID is used most often in areas where mix-ups must be avoided; where existing processes need to be automated and where reprocessing of medical products and clinical textiles must only take place a certain number of times.

Giving as an example the electronic pharmaceutical cabinets that control prescriptions and dispensing, Andreus Hagen adds that some hospitals in the USA already use cabinets from suppliers specialising in RFID technology, although most still uses barcodes for drug tracking and finger printing technologies for staff identification. 'For hygiene reasons – RFID is contactless – and because of the higher degree of automation future generations of electronic pharmaceutical cabinets will no doubt turn to RFID, because it provides an automatic and contactless check of the RFID staff ID. If a drug or other object is fitted with a RFID transponder, the cabinet's technology will automatically check and register data on who took what and when from the cabinet and will issue new orders when necessary. Unlike barcode technology RFID does not require the object or ID card to be physically moved towards the barcode reader.'

Patient ID

Patient associations in the US, UK and Germany consider correct patient identification a cornerstone of patient safety, he adds, and in German speaking countries, the potential value of RFID for patient safety is increasingly recognised. A number of RFID pilot projects have proved that using RFID for patient identification can greatly improve patient safety, he says. These projects include dementia (senior citizen home Langelsheim), support of correct medication (Saarbruecken Hospital, Jena University Hospital), the central operating theatre (Innsbruck University Hospital), blood samples and blood transfusion (St Gallen District Hospital).

Monitoring contacts with highly contagious diseases

During the SARS outbreak in the Far East, wristbands fitted with activated RFID transponders were issued in Singapore to patients, visitors and staff at the Alexandra Hospital. Every encounter closer that two metres, between two people, was recorded and stored on the wristbands. When anyone left the hospital, the data were read and transmitted to a central database. Should someone contract SARS, every one of their contacts could thus be traced and isolated, to prevent SARS spreading.

RFID limitations?

In a preliminary research report, Wilfried von Eiff, Andreas Hagen, Alexander Prangenberg point out that when adopting RFID technology for patient care, staff should be involved early on in the planned workflow changes, and proper training should be provided in the use of the devices. 'The effects of the implementation of new technologies have to be carefully analysed and evaluated in pilot projects. A process analysis and a Critical Incident and Reporting System (CIRS) that is accepted by the staff are crucial. Particularly a thorough post-implementation analysis of Critical Incidents is required as this is often the only tool for the early detection of new risks.'

The team also recommends a combination of technology (RFID), organisation (fitting the wristband which is marked with the name of the patient) and human control (asking the patient for his/her name) to provide the highest possible safety. 'If a patient or a family member is unable to respond and the technology fails, there is at least the name tag to provide identification.'

In conclusion: 'Due to their high degree of automation, RFID solutions integrated in system immanent security (Poka Yoke) and process optimisation systems may contribute greatly and cost-efficiently to hospital risk management and patient safety.

'Although barcode and RFID are not necessarily mutually exclusive but can complement each other well, the successful introduction of RFID in medical-clinical processes will depend on the penetration rate of barcodes and on the degree to which the current advantages of the barcode technology will prevail.'

*** To participate in the online **RFID Survey 2007** visit the CKM website: http://www.ckm-consult (Projekte) or http://www.rfidhospital.de.*

RFID applications in healthcare

Application	Objective/ remark	Frequency
People	Mostly patient identification to avoid errors, as well as staff identification (tracking, alarm)	42%
Medical equipment and devices	Theft protection for valuable goods, avoiding misplacement and allowing quick tracking	17%
Pharmaceuticals and laboratory samples	Tests and one roll-out in 2005 to avoid counterfeiting, one large-scale application and many tests for error avoidance	29%
Blood	Mostly error avoidance	6%
Others	Access cards, tags and passes, patient files and reimbursement. Supply chain management (logistics) with pallets, boxes and pharmaceutical cabinets	6%

Source: Based on Harrop/ Das/ Holland, IDTechEx (2006)

The ERS Congress

15-19 SEPTEMBER 2007

The European Respiratory Society (ERS) Congress is the world's biggest annual scientific gathering in respiratory medicine. This year, after a five-year absence, it returns to Stockholm, a city famous for its Nobel prizes and Karolinska Institute (whose researchers contributed to 11 *European Respiratory Journal* original articles in 2006). The Congress is augmented by the world's leading experts in this field. 17,240 delegates from over 100 countries attended the 16th ERS annual Congress in Munich last year.

This year there will be 40 Symposia; 20 'Hot Topic' symposia and 'Grand Rounds'; free communication sessions, including 86 oral presentation sessions, 64 poster discussions, themed posters and electronic poster sessions; 23 postgraduate courses, one educational and 18 'Meet the Professor' seminars, as well as evening symposia held by industry.

The important role of primary care in respiratory health service provision will also be highlighted in a 'Primary Care Day' on 15 September. The programme has been endorsed by the International Primary Care Respiratory Group and the Swedish Respiratory Group in Primary Care.

The European Board of Accreditation in Pneumology (EBAP) will allow European pneumologists to apply for Continuing Medical Education credits.

Non-invasive monitoring of

By **Paolo Montuschi MD,** of the Department of Pharmacology, Faculty of Medicine, Catholic University of the Sacred Heart, Rome, Italy

The pathophysiological role of inflammation in lung diseases including asthma and chronic obstructive pulmonary disease (COPD) is well established. Quantifying lung inflammation is relevant for the management of inflammatory airway diseases as it may indicate that pharmacological intervention is required before symptom onset and reduction in lung function. Moreover, monitoring of airway inflammation might be useful in the follow-up of patients with asthma and COPD, and for guiding pharmacological therapy. Quantification of pulmonary inflammation is currently based on invasive methods including the analysis of broncho-alveolar lavage (BAL) fluid, bronchoscopy, and bronchial biopsies, semi-invasive methods such as sputum induction, and the measurement of inflammatory biomarkers in plasma and urine, which are likely to reflect systemic rather than lung inflammation.

Interest in the identification of non-invasive biomarkers for inflammatory airway diseases has been growing. These biomarkers should identify those patients who are more susceptible to the disease; reflect the degree of pulmonary inflammation and the disease severity; be reproducible in stable clinical conditions; be suitable for repeated measurements in the longitudinal follow-up of the patients; be elevated during exacerbations; be useful for monitoring pharmacological therapy; and be of prognostic value.

Exhaled breath consists of a gaseous phase that contains volatile compounds (e.g., nitric oxide, carbon monoxide, and hydrocarbons) and a liquid phase, termed exhaled breath condensate (EBC) that contains aerosol particles in which several non-volatile compounds have been identified. Measurement of exhaled nitric oxide (NO) is a well accepted, standardised, validated and widely used method for assessing airway inflammation in patients with asthma who are not being treated with inhaled glucocorticoids. Measurement of exhaled NO is rapid, reproducible, and provides immediate results. Concentrations of exhaled NO in patients with asthma correlate with sputum eosinophil cell counts and airway hyper-responsiveness before glucocorticosteroids. One portable analyser is commercially available and can be used to assess and monitor airway inflammation in patients with asthma on field.

Sputum induction is a semi-invasive method for assessing airway inflammation. This technique has been standardised. Sputum analysis for evaluation of percentage of sputum eosinophils directly measures airway inflammation, and is one method of objectively monitoring asthma. However, although generally considered safe, sputum induction with hypertonic saline solution can cause bronchoconstriction, particularly in patients with airway hyper-responsiveness; can induce airway inflammation by itself; can be difficult to perform, particularly in children and in patients with severe asthma or COPD; requires dedicated staff and equipment and processing of samples within two hours from collection.

Recently, attention has focused on EBC as a non-invasive method for studying the composition of airway lining fluid. Using urea, which is a freely diffusible molecule, as a marker, it has been demonstrated that a measurable fraction (1 in 24 parts) of the EBC in healthy subjects is derived from aerosolised airway lining fluid. EBC analysis of inflammatory biomarkers is a non-invasive method that has the potential to be useful for monitoring airway inflammation in patients with respiratory diseases, including children. As it is completely non-invasive, EBC also is suitable for longitudinal studies and to monitor the response to pharmacological therapy. Furthermore, different biomarkers might reflect the different aspects of lung inflammation or oxidative stress, which is an impor-

Setting international standards for TB care

By **Professor Giovanni Battista Migliori MD**, Director of the WHO Collaborating Centre for Control of Tuberculosis and Lung Diseases

Prof. G B Migliori is co-ordinating several national and international research projects on TB and asthma control for the Italian Ministry of Health, the World Health Organisation and the IUATLD (International Union Against Tuberculosis and Lung Disease).
His experience and activities in the field are too extensive to list. They include important contributions to the new Ugandan National Health Information System. Since 1995, he has been a Consultant of the World Health Organisation (in charge of TB control) with significant contributions to approaches in Russia, Romania, the Ukraine, Moldova, Turkey, Kosovo, Estonia, Mozambique and Italy.
In 2000, he became Director of the WHO Collaborating Centre for Tuberculosis and Lung Diseases and, from 2003, Head of the Clinical Epidemiology Service of Respiratory Disease, Fondazione Salvatore Maugeri, Care & Research Institute, Tradate, in Italy.
Prof. Migliori is presently co-ordinating several national and international research projects on TB and asthma control for the Italian Ministry of Health, the WHO and the IUATLD (International Union Against Tuberculosis and Lung Disease).
He is the author of the European Guidelines for TB control and co-author of the main guidelines on TB control resulting from the IUATLD/WHO workshops (Wolfheze documents), and is Associate Editor of the European Respiratory Journal, and prolific contributor to other specialist journals.

Principles of tuberculosis control and elimination

TB control is a public health function aimed at reducing the transmission of TB bacilli in the general population.

Presently, at global level the TB notification rate is still growing at an average 1% per year, largely the result of the constant increase of cases in sub-Saharan Africa and, to a lesser extent, in the former Soviet Union with a significant prevalence of multi-drug-resistant (MDR –TB) and extensively drug resistant (XDR-TB) cases.

XDR-TB is a new, severe form of TB presently defined as resistant to at least rifampicin and isoniazid (which is the definition of MDR-TB), in addition to any fluoroquinolone, and to at least one of these three injectable drugs used in anti-TB treatment: capreomycin, kanamycin and amikacin.

In January 2006 the new *Global Plan to Stop TB, 2006-2015* was launched. The plan, underpinned by the *Stop TB Strategy*, describes strategies, financial requirements and existing gaps to reach the *Millennium Developments Goals* (MDGs) in all regions of the world.

The new Stop TB Strategy for Tuberculosis Control and its contribution to control and eliminate tuberculosis

The DOTS strategy (composed of five key elements: government commitment, diagnosis through sputum smear microscopy, standardised and supervised treatment, uninterrupted drug supply, and regular programme monitoring) has greatly contributed to improved global TB control over the last 10 years.

However, due to a variety of reasons, DOTS has not been sufficient to control the epidemic in the two regions of Africa and Eastern Europe. This is why the new Stop TB Strategy promoted by the World Health Organisation, while keeping DOTS as the first and foremost of its six components, has made explicit five additional components that must be implemented to reach the 2015 MDGs relevant to TB: 1) pursue high-quality DOTS expansion and enhancement; 2) address TB/HIV, MDR-TB and other challenges; 3) contribute to health system strengthening; 4) engage all care providers; 5) empower people with TB and communities; 6) enable and promote research.

International standards for TB care

The International Standards for Tuberculosis Care (ISTC) have been developed as a tool that can be used to improve the quality of care across all providers, public and private. The ISTC are intended to facilitate the effective delivery of high-quality care for all patients regardless of age or gender, and including the 'complicated' cases, those who are sputum smear-negative, have extra-pulmonary sites of disease, and those who are affected by MDR-TB, or co-infected with HIV. They are designed to put the patient at the centre of care and the healthcare provider at the centre of TB control. The document includes six standards for diagnosis, nine standards for treatment and two standards addressing public health responsibilities.

The ISTC emphasises, among other issues, that TB diagnosis should be promptly and adequately established, based, whenever possible, on bacteriological evidence. Standardised treatment regimens of proven quality should be prescribed, with appropriate treatment support and supervision. The response to treatment should be monitored and microbiological examinations performed. The essential public health responsibilities should be carried out, including evaluation and management of close contacts as well as case notification and reporting of treatment outcomes.

ISTC, private sector and scientific societies

Although the ISTC is evidence-based and widely accepted, it is only a tool, not an end in itself. To achieve adherence to the standards in the ISTC it is critical that they have sufficient 'weight' to wield influence and be disseminated to relevant practitioners. This can best be achieved by having broad endorsement of influential medical and nursing professional societies, both national and international and that these societies then develop educational activities based on the ISTC. Of key importance is the close collaboration with the national TB programme and the synergistic attempt to include the ISTC among the basic tools required for the proper implementation of public-private mix (PPM) DOTS approaches.

Conclusions

The epidemiologic evidence indicates the specific new challenges for tuberculosis control in Europe.

The ISTC document is aimed at stimulating the global effort in the fight against tuberculosis starting from the quality management of each individual patient by each individual physician.

Contact: gbmigliori@fsm.it

New monitoring device for

France & Germany – Trauma patients are being more and more monitored with a novel portable device to measure oxygen saturation in tissue. Called the *InSpectra StO₂* Tissue Oxygenation Monitor it was developed by the Minnesota-based firm Hutchinson Inc, previously best known for the manufacture of computer components. *Daniela Zimmermann* asked **Peter Ickert,** Hutchinson's newly appointed General Manager for Europe, about this product shift. 'Since the company is specialised in measuring processes and production techniques, about ten years ago we decided to move into medical technology,' he explained. 'The company has since carried out numerous clinical studies to validate the quality of its products in practical applications.'

Peter Ickert (seated with Daniela Zimmermann) joined Hutchinson Inc as Marketing Director for Europe six months ago; he is now General Manager for Europe

The novel monitor, which measures oxygen saturation in tissue with near-infrared spectroscopy, is one of these. 'The conventional non-invasive device, the pulse oximeter, measures only the hemoglobin oxygen saturation in the arteries. However, our product measures the oxygen in the tissue,' he pointed out. 'The crucial question when measuring oxygen saturation is: Does the oxygen get to the point where it is needed, namely the tissue?'

Study results have demonstrated that StO_2 measurements of less than 75% might indicate serious hypoperfusion in trauma patients. The firm reports that the monitor is the only tissue oxygenation monitor designed for trauma environments, that provides a direct, absolute measurement of haemoglobin oxygen saturation in tissue (StO_2), which provides trauma teams with those vital measurements and continuous monitoring during resuscitation. It uses near infrared light to illuminate tissue, then analyzes the returned light to produce a quantitative measurement of oxygen saturation in the microcirculation.

The InSpectra is primarily targeted at the trauma and emergency medicine market. 'In that segment it's above all the bleeding patients who benefit from it. In a trauma situation it's very difficult to determine whether a body is sufficiently perfused. This is something that ultimately requires an invasive procedure and delay time in obtaining lab results' he explained. 'So a fast and non-invasive device, which on top of

airway inflammation in asthma and COPD

Paolo Montuschi MD

tant component of inflammation. Identification of selective profiles of biomolecules in different inflammatory airway diseases might be relevant for differential diagnosis in respiratory medicine. Collection of EBC samples is simple, not expensive, and safe. However, unlike exhaled NO measurement, EBC technique does not provide real-time results as EBC samples need to be assayed for different biomolecules. Several methodological issues, including standardisation of EBC technique and validation of analytical methods, need to be addressed before this approach can be considered for applications in the clinical setting.

This article discusses the advantages and the limitations of measurement of exhaled NO, analysis of sputum eosinophils, and analysis of EBC in patients with asthma and COPD, and provides suggestions for further research in this area.

Measurement of exhaled nitric oxide

In some centres, measurement of exhaled NO is now available as a routine test for asthmatic patients. This method is useful in the diagnosis of asthma, can be used to monitor the response to inhaled glucocorticoids in patients with asthma; can predict asthma exacerbation and can be used to monitor compliance. Exhaled NO concentrations in patients with asthma decrease rapidly after anti-inflammatory therapy and are elevated during exacerbations. With the use of exhaled NO measurements, maintenance doses of inhaled corticosteroids may be significantly reduced without compromising asthma control.

Data on the concentrations of exhaled NO in patients with COPD are controversial. One important limitation of measurement of exhaled NO in these patients is that exhaled NO is strongly affected by NO content in cigarette smoke and most of the patients with COPD have a smoking history.

The clinical utility of exhaled NO measurement is currently limited to patients with asthma, as its role in the management of other respiratory diseases, including COPD, is not yet defined.

Analysis of eosinophils in sputum induction

Tailored asthma interventions based on sputum eosinophils can reduce the frequency and severity of asthma exacerbations in adults with asthma. For this reason, sputum eosinophil analysis has been proposed to adjust and monitor asthma therapy for adults with frequent exacerbations and severe asthma. The utility of adjusting asthma therapy based on sputum eosinophils compared with traditional methods (primarily clinical symptoms and spirometry/peak flow) in children with asthma needs to be established.

Although neutrophils and macrophages are generally considered to play the major pathophysiological role in COPD, up to 40% of patients with COPD have sputum eosinophilia. Analysis of sputum induction might be useful for identifying phenotypes of COPD patients. These patients are generally relatively resistant to glucocorticosteroids. However, improvement in lung function and symptoms concomitant with a reduction in sputum eosinophil counts are observed in patients with COPD with high baseline sputum eosinophilia, after treatment with inhaled or oral glucocorticosteroids. The response to glucocorticoids in this subgroup of COPD patients does not seem to be solely due to an asthmatic component, as sputum eosinophilia is not necessarily correlated with reversibility to bronchodilators and the latter is not associated with steroid responsiveness. However, the role of sputum induction in patients with COPD has yet to be established.

Exhaled breath condensate analysis

Several biomolecules have been identified in EBC and found elevated in patients with asthma and/or COPD including hydro-gen peroxide, 8-isoprostane, leukotrienes (LTs), prostaglandins (PGs), nitrites, nitrates, and nitrosothiols. In most of the studies, biomolecules in EBC have been measured with commercially available immunoassay kit, which require validation with reference analytical techniques. The presence of 8-isoprostane, LTB_4, PGE_2, glutathione, and aldehydes in EBC has been demonstrated by mass spectrometry analysis. pH values in EBC are reduced in patients with acute asthma and stable COPD.

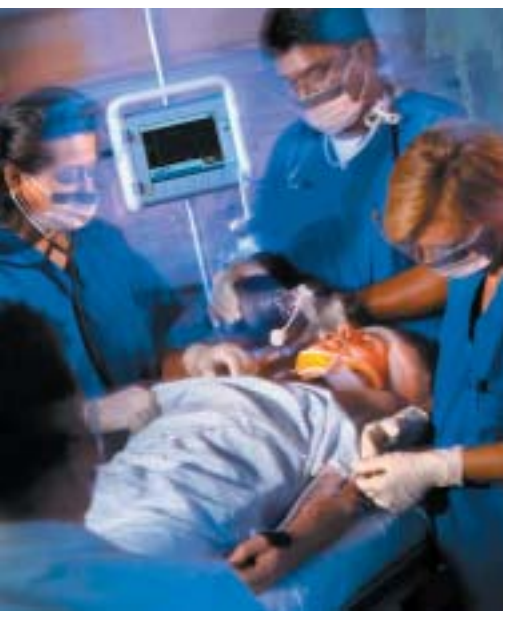
Measurement of pH in EBC is easy, rapid, and provides immediate results. However, some variables including the effect of ambient CO_2 and oral bacteria need to be considered. Most of the studies on EBC are cross-sectional. There are relatively few interventional studies aiming at measuring biomolecules in EBC and they are all single centre studies. The lack of standardised procedures and validation of analytical techniques is currently the main limitation of EBC analysis. Guidelines for measurement of biomolecules in EBC are available, but their usefulness is limited by the fact that many methodological issues still need to be formally addressed. Moreover, each biomarker in EBC needs to be considered separately and this makes it the standardisation of this technique more complex. However, considering the relative lack of non-invasive methods for monitoring airway inflammation and therapy, and the relevance of its potential applications, additional research on EBC analysis is warranted.

Conclusions

Measurement of exhaled NO should be used for assessing airway inflammation in patients with asthma, whereas its utility in patients with COPD is limited. Analysis of sputum eosinophils can be used to tailor and monitor anti-inflammatory therapy in asthmatic patients. This technique might contribute to the identification of COPD phenotypes with important therapeutic implications for patients with COPD. However, sputum induction is unlikely to become a routine technique for assessing airway inflammation. Identification of selective profiles of biomarkers in EBC and the pharmacological modulation of their concentrations in this biological fluid might have important diagnostic and therapeutic implications for patients with asthma and COPD. However, due to the current lack of standardisation, whether and when EBC analysis will be applicable to the clinical setting is difficult to predict.

As both asthma and COPD are heterogeneous diseases characterised by different phenotypes, the combination of different non-invasive and semi-invasive techniques, including measurement of exhaled NO, sputum induction, analysis of EBC, and possibly, new techniques using biosensors for measuring biomarkers in the exhaled breath, could be the best approach for assessing airway inflammation in the individual patient with asthma or COPD. For its important diagnostic and therapeutic implications, this approach might ultimately lead to a better management of patients with asthma and COPD.

perfusion monitoring



everything provides continuous reading, is crucial for those patients. The InSpectra generates reliable results in only 20 seconds, which means that some trips to the lab are no longer necessary. The device continuously records the values in two-second intervals, so that the oxygen saturation history in the tissue can be tracked. So, it's currently for use throughout trauma care.

'Unlike in the US, in Europe that includes emergency response, because here the trauma patient receives complete first treatment at the accident site.'

So the device is part of the ambulance equipment, then moves into a hospital with the patient and emergency doctor?

'Yes. InSpectra is part of the emergency chain, at present primarily in intensive care units (ICUs) and shock rooms. However, in Germany and France we are in the process of evaluating the system in ambulances and emergency doctors' vehicles.

The emergency market is quite saturated, so who, in particularly would want the InSpectra?

'Everyone who wants to know whether a patient's tissue is sufficiently saturated with oxygen and whether that saturation is not being compromised by unrecognised haemorrhages. The trauma team can only react in time if this is known - and with the help of this device it can react much earlier than before. We offer continuous measurement, which means changes can be recognised in real-time – and non-invasively! That means the device can be used on the spot, by an ambulance team.'

In that field of application it is necessary to get readings fast. How was that solved?

'Yes, time is crucial. Our procedure is very simple: you just have to apply a sensor to the patient's thenar eminence – and that's something every trained trauma team member can do.

Contact:
biom.eu@hti.htch.com;
More information:
www.htibiomeasurement.com

HYGIENE

Wisdom

Stupid people always make the same mistakes, intelligent people learn from their own mistakes; wise people observe others and learn from them. Global player, Metsä Tissue has made this pearl of wisdom their own and analysed the market in full including competitors and users. Further, in the European study research was made not only into the standard of toilet today, but also the expectations of the public as how they would like toilets to be.

Europe-wide the standard of cleanliness of toilets is most severely criticised where there are hygiene and health implications. This is caused by a lack of expert knowledge on the part of the decision makers, with regard to actual facts and their ensuing effects in terms of using suitable dispensers and apparatus and above all from using poor quality paper which 'produces' poor cleanliness. The corollary to this negativity is that the service provider has, in most cases, users who turn up their noses (customers, own staff) and a high infection risk and high service costs (cleaning & maintenance).

'These deficits in the washrooms of health service, industry, in office buildings, or gastronomy, could all be a thing of the past', says Frank Ledosquet, Metsä Tissue's Marketing Manager for Central Europe, happily. 'We are proud that our paper quality is good, but we needed to upgrade our dispensers and toilet accessories. With our new *Katrin* dispenser series, toilets can from now on be fitted out accordingly with the correct dispensers for each type of application and with the right paper quality all harmoniously matched'.

The product diversity of the Katrin dispenser range makes it possible for every washroom to be customised. There are several holes on the back of the new dispensers, making it easy to replace without drilling other holes. The back plate and screws are out of sight and therefore protected against water splashes. The dispenser's body is made of robust ABS plastic and can be quickly cleaned. It can be easily seen through the integral window how full the dispensers are. A further distinctive feature is the choice of lock function. This new series can be changed from lockable to openable dispenser with just a turn.

The user-specific diverse range includes different dispensers for paper towels, toilet paper, soap (in a completely closed system), hand wash foam, air fresheners, (for the first time with 100% anti-allergic contents), as well as a new type of disinfectant foam in a dispenser for toilet seats.

It is important to note that many functions can be operated without direct contact, which maximises the standard of hygiene and minimises risk of infection. Furthermore, this new dispenser generation is the perfect combination of the appropriate dispenser and paper quality for the individual situation and is a guarantee of the highest economic viability.

The results have shown that a 50% reduction can be seen, not only in usage, but also in storage and wastage. Likewise, the refilling time can be reduced by from 30% up to potentially 75%.

Free information about what, in your property, can increase quality and at the same time reduce costs, is available from:
Metsä Tissue GmbH,
Bahnhofstrasse 60, D- 59379 Selm- Bork
Phone: +49 (0) 25 92/ 66- 0
Fax: +49 (0) 25 92/ 66- 169
E- Mail:
katrin.de@metsatissue.com
www.katrin.com
www.metsatissue.com

Saving diabetics' feet

Disease management programmes (DMP) yield first results

Heidi Heinhold reports

Diabetic foot syndrome (DFS) is one of the most serious sequela of diabetes mellitus. DFS, described in the Wagner classification system by six grades from the initial wound to amputation (Fig. 1–6), is a slowly developing condition that presents a major challenge for the medical team, which should include podiatrists and orthopaedic technicians. In Germany alone, current estimates indicate 29,000 diabetes mellitus-induced amputations annually, most of these following an infection – particularly MRSA. 10% of all diabetics with DFS will undergo a major amputation of the lower extremities, and 20% of these patients will not survive the surgical intervention.

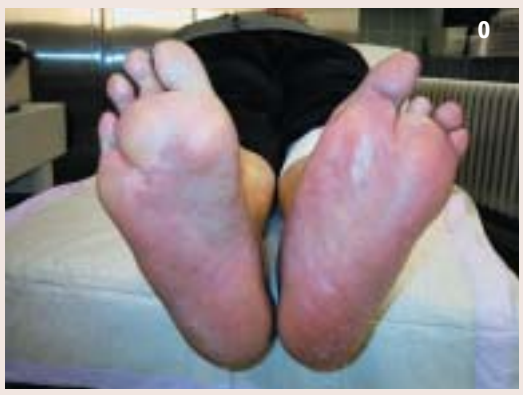
The problem and causes of DFS

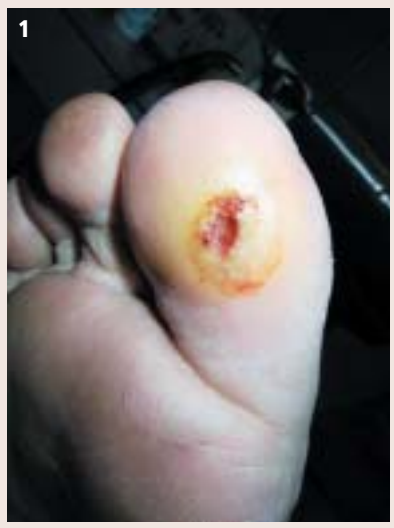
The crucial issue with DFS is the sensor and motor polyneuropathy that affects about 60% of these patients. Sensor polyneuropathy reduces pain sensitivity, which means the patient or the family notice a weeping wound on the sole of the foot only because socks or shoes are wet. Fairly often, it is only upon discovery of such a wound and subsequent consultation with a doctor that the patient realises s/he suffers type II diabetes mellitus that needs treatment. In many such cases the patients had not paid much attention to their feet and overlooked previous symptoms, such as reduced sweat secretion, excessively warm, dry, chapped and callous feet and even deformations caused by motor neuropathy. The latter atrophies the short foot muscles and causes changes in the form of the plantar arch, which in turn leads to a different distribution of pressure when walking and, consequently, to callus formation on the foot where the pressure is most intense. Often, these physical developments are ignored because they are taken as normal signs of ageing. According to a Health Care Monitoring study, patients take their bodies for granted, or maybe fall into one of the following categories:

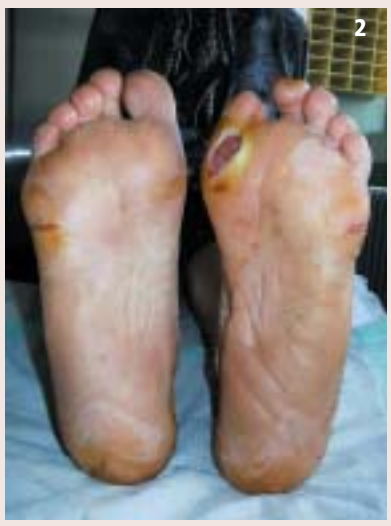
- 21% of adults take only the most basic measures to maintain health; they consider a visit to the doctor's surgery is an easy way out and tend to reject self-medication
- 15% of adults feel healthy; they talk and think little about their health; they know that their personal healthcare is inadequate but see no point in changing their behaviour
- 17% of adults are not interested in their individual health; they feel healthy and rarely see a doctor (Source: Health Care Monitoring, a German study involving 3,000 people. Details: www.psychonomics.de)

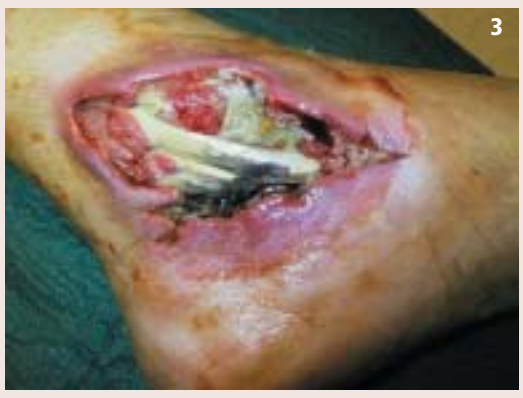
According to this study 46.6% of the adult population have little or no interest in their health and react too late to a condition that would have prompted the other half of the population to see a doctor. This disinterest might explain why so many patients present with severe medical conditions.

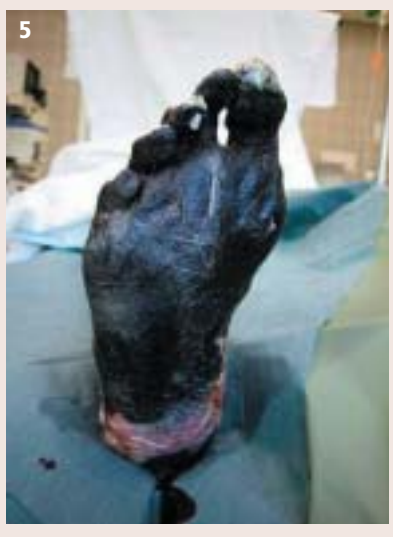
A further consequence of neuropathic disorders is diabetic neuropathic osteo-arthropathy (DNOAP or 'Charcot foot'), which causes the plantar arch to collapse, leading to deformities due to increased pressure and callus formation.











About 30% of these patients suffer a combination of peripheral arterial disease (PAD) and diabetic neuropathy, 10% have ischaemia. In both cases the prognosis is even worse than for neuropathy due to the vascular situation and poor circulation. Vascular diagnostics and reconstruction are imperative – a fact that underlines the necessity for close cooperation between diabetologists and vascular surgeons, if the patient is to have a chance to avoid amputation.

Even better: the patient can be convinced to participate in a disease management programme (DMP).

In Germany, such programmes have shown very promising results. In December 2006, the first data analyses to provide an indication as to the effectiveness of DMPs became available. In one German Federal State the condition of 44,995 patients with type II diabetes mellitus were recorded for six months (April to September) in 2006, and the study showed that very few cases of diabetic keto-acidosis had been reported. This means that diabetics in Germany are quite well prepared to avoid this dreaded life-threatening metabolic disorder. After all, 30.1% of them could get rid of typical diabetes symptoms, such as fatigue, polyuria and polydipsia (excessive thirst). High blood pressure was under control in almost 40% of them. 92.9% of the patients underwent a foot examination but only 48.6% participated in diabetes training.

These figures show that the education issue requires much more attention. This might well be the most difficult task for the medical team: The patient has to understand that he will benefit from that education and learn to control the disease and its consequences rather to be controlled by it.

Source: Phasengerechte Versorgung beim Diabetischen Fußsyndrom, Coloplast GmbH, Hamburg)

Wagner classification of diabetic foot lesions

Grade	Foot lesion
0	No lesion, foot risk, foot malposition, hyperkeratosis
1	Superficial lesion
2	Deep ulcer extending to muscles and ligaments
3	Deep ulcer and infection (to muscle, tendon and bone) with osteomyelitis
4	Partial gangrene
5	Extensive gangrene

Healing skin wounds

Researchers define the role of signal molecule c-Met

c-Met – the signal molecule that regulates cell growth and cell migration during embryonic development – has been shown to play a key role in healing in the skin, according to a paper published in the *Journal of Cell Biology* (Vol.177, Nr. 1, pp. 151 – 162, 2007) by PhD student Jolanta Chmielowiec, working with Professors Walter and Carmen Birchmeier at the Max Delbrück Centre for Molecular Medicine (MDC) in Berlin, Germany. The research demonstrated that if c-Met is missing in skin cells, no new tissue can form to close a wound.

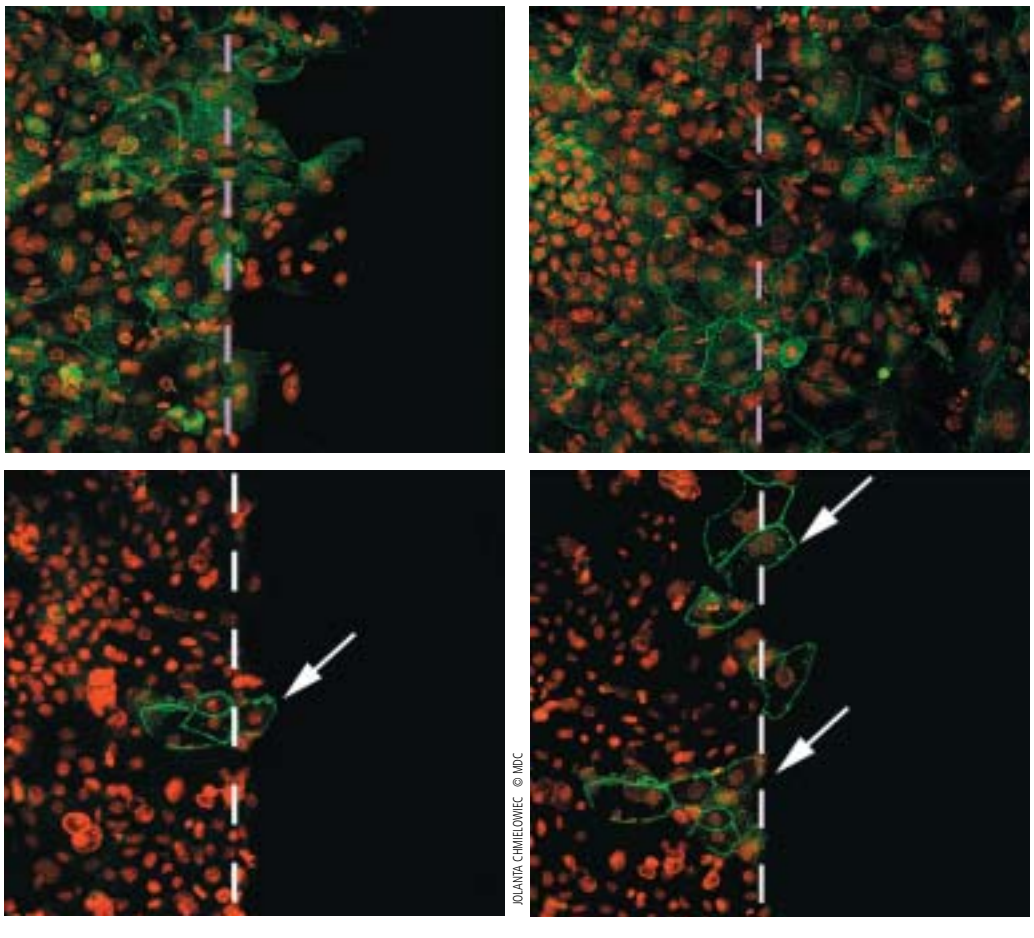
When the skin is injured, it first scabs over, sealing the wound. Starting from the edge of the wound, keratinocytes then migrate across the wound, proliferating very quickly to rapidly form new skin tissue – hyperproliferative epithelium – which also fills the wound with new skin cells so that new tissue can replace the scab.

c-Met regulates this migration process from the edge of the wound. It is a receptor molecule also localized on epithelial cell membranes.

Professor Carmen Birchmeier and her research team have studied the role c-Met plays in developmental biology for several years. Interacting with c-Met is a growth factor named hepatocyte growth factor/scatter factor (HGF/SF) because it was found to be a growth factor in hepatocytes (liver cells). The liver regenerates particularly quickly after injury. In cancer research, this factor also plays a key role as scatter factor, which Professor Walter Birchmeier and his colleagues demonstrated repeatedly.

The duo HGF/SF and c-Met is crucial in regulating cell migration. Together, the two are not only released in the liver, but also in the lung, the kidneys, and the heart when these organs are injured. As MDC researchers were able to show, this is also the case with skin wounds:

Cells responding to a skin wound. Those in the upper row have functioning c-Met, which reproduce quickly and move to the wound area; in 48 hours the site contains a large number of these cells. In the lower row many cells do not have c-Met; these respond much more slowly. Only those cells that have c- Met enter the wound region



The hydro-active wound dressing

The German firm Hartmann reports that *Hydrotul,* its new hydrocolloid impregnated dressing, combines the benefits of conventional impregnated dressings with those of hydro-active wound dressings. 'Whilst the ointment keeps the wound margins soft and supple and prevents macerations, the carboxymethyl cellulose (CMC) particles integrated in the ointment mass form a hydroactive gel when in contact with the wound exudate. This creates a moist wound environment to promote wound healing, and prevents the

wound dressing from sticking to the wound. The honeycomb-like structure of the carrier material has large pores for unimpaired exudate drainage in severely exuding wounds.'

The firm points out that Hydrotul can be left on the wound for several days to allow a wound to 'rest', and adds that an atraumatic dressing change is possible.
Sizes: 5 x 5 cm, 10 x 12 cm and 15 x 20 cm.

RESEARCH

A deeper view of wound infections

Launched last year, the *Wound Infection Institute* (WII), supported by Smith & Nephew Wound Management, now has a 130-strong membership, which include leading clinicians and scientists working to understand more about wound infections and their control. 'Wound infection scares me on a daily basis,' says Professor Keith Harding, Chairman of the Institute and Director of the Wound Healing Research Unit in Cardiff, Wales. 'Increasing our knowledge of why a wound is infected and how we may best be able to treat it is fundamental for our future.'

The institute aims to develop a complete reference source for wound infection for use by any clinicians who need to check on currently available treatments and related manufacturers' claims. 'Ultimately, it is hoped that the major references will be abstracted and graded in terms of the evidence available,' the institute points out.

In June 2008, a consensus paper on wound infection, one of six key projects initiated by the organisation's executive body, will be launched at the World Union of Wound Healing, and the Institute will hold its first annual general meeting, when it expects to have completed and launched all those projects via its website.

When it becomes a self governing body, clinicians will provide original work within three core areas: evidence, education and research.

WII membership is open to clinicians, infection control specialists, educationists, scientists or people in related industries.
E-mail for details: wii@opencitylimited.com

HGF/SF and c-Met are increasingly released by the hyperproliferative skin tissue. Hence, this tissue promotes its own growth. However, while c-Met is normally found in both the skin and the hair follicles (and in wounds is increasingly released in the hyperproliferative epithelium), HGF/SF is proven to be present prior to injury in the hair follicles but not in the skin. HGF/SF is not active in the skin until after an injury at which time it is particularly active at the wound edges of the hyperproliferative epithelium.

With a special technique, the MDC researchers specifically deactivated the gene for c-Met in mice. They discovered that mice whose skin cells no longer produce c-Met do not form new skin when the skin is injured. In mice that still have some skin cells with active c-Met, because those cells escaped the genetic mutation, wound healing is not blocked. However, it starts later and takes twice as long as usual. This means that only skin cells with active c-Met can build up fast-growing, protective new tissue to close a skin wound.
Corresponding author:
Walter Birchmeier.
E-mail: wbirch@mdc-berlin.de

AACC emphasises preventive diagnostics

San Diego, California – 20,000 international physicians, scientists and other visitors travelled to the Annual Meeting & Clinical Lab Expo of the American Association for Clinical Chemistry (AACC) in July, and 750 exhibitors emphasised the increasing importance of this gathering

Automation

Abbott Molecular showed the *m*2000 system, an automated centre for sample preparation and real-time PCR: The *m*2000sp uses primary bar-coded tubes and precision pipetting in an open mode, thereby reducing transcription errors. It eliminates manipulation and provides flexible protocols for various samples. The *m*2000rt real time reader incorporates automated quality checks and calibration for accurate results, while the Windows XP based software system automatically reduces archived data. The RealTime HIV-1 assay measures levels of the HI-Virus and could be used as marker of disease prognosis and for validation of antiretroviral treatment.

Abbott Diagnostics also previewed twelve new analyzers, including five systems of the ARCHITECT pipeline. The units, which are all expected to enter the market by early 2009, offer clinical laboratories with low- to high-volumes great flexibility.

Beckman Coulter's UniCel family of multi-platform systems is designed to be cross-functional, accommodating chemistry, immunoassay, haematology and even future components. Processing up to 200 tests per hour, the new UniCel DxI 600 is designed as the ideal full-featured solution for the mid-volume testing range. The DxI 600 is easy to use and offers more than just robust features: On-board alliquotting and refrigerated sample-storage, allowing immediate execution of reflex tests or reruns. It helps laboratories to reduce costs.

Siemens Medical Solutions Diagnostics announced the ADVIA 1800 chemistry analyzer. ADVIA series' key features, a faster and more reliable ISE test module, and easy sample and reagent loading provide a productivity benefit. The unit could be connected to the ADVIA WorkCell or ADVIA LabCell Network Solutions without need to acquire expensive interface hardware. With a performance of up to 1800 tests per hour, or 200 Basic Metabolic panels per hour, the new system ensures that peak workloads could be handled quickly.

Tony Bihl, CEO of Siemens Medical Solutions Diagnostics, explains that his company combined in-vitro and in-vivo capability by cementing it with IT. 'When the former Bayer Diagnostics acquired Imulite, it merged immuno assay capability to Bayer's chemistry. That enabled Bayer to serve more and also smaller hospitals and to process 99% of all tests coming from highly automated laboratory lines. Since January 2007, as part of Siemens Medical Solutions, Siemens provides the IT which manages the immense data, builds and incorporates the rules and thereby shows not only accurate data results, but prescribes therapies that are sped off to the treating physician. The result is expedited workflow and efficiency in the lab and hospital and faster improved outcomes for patients.'

Roche's subtle innovations support bi-directional network integration to the cobas IT1000 Point of Care Data Management Solution. Automated result entry and quality control greatly enhance Patient safety. The cobas b221 is Roche's new multi-parameter analyser for blood gas, electrolytes, CO-oximetry and metabolites. Long-life sensors and an automated QC-System reduce maintenance to a minimum. The CoaguCheck SX system currently received FDA approval. It measures PT/INR quickly, stores 500 test results and has QC lock-out capabilities.

The Accu-Check Inform embodies Point of Care Testing abilities. It's a hand-held system aimed for glucose testing in hospitals. Test Strips allow sampling from capillary, venous or arterial blood. The user-friendly system features enhanced electronic documentation: Internal memory stores up to 4,000 patient-specific measurements, while a user comments section is fully customisable.

Scientists presented studies and discussed clinical topics, showing that innovations really have features that could be used to improve the situation of patients.

The American College of Obstetricians and Gynaecologists (ACOG) suggested chromosomal screening to all pregnant women, regardless of age, as improved non-invasive methods allow earlier testing at low-risk. 'Amniocentesis is still the gold standard, but it's an invasive procedure that carries a far greater degree of risk for the pregnancy than a non-invasive screening test,' said Jacob Canick, PhD, Women and Infant's Hospital in Providence, RI. First trimester ultrasound and biochemcial testing, moreover integrated screening in first and second trimesters, achieve detection levels of nearly 90%.

An expert panel assembled by the Health Resources and Services Administration and the American College of Medical genetics released a nation-wide newborn screening standard, which was long overdue. The uniform condition panel for newborn disorder screening already shows great effect. 'Testing is now being performed far more homogeneous than in the past and we are close to a full implementation across the country,' said Piero Rinaldo, MD, PhD, expert panel member and the T. Denny Sanford Professor of Paediatrics at the Mayo Clinic in Rochester, MN. The uniform panel includes 54 conditions, thereof 42, that can be detected using tandem mass spectrometry. 'Next we need to start talking about performance metrics – setting targets and meeting them.'

One-third of Americans are considered to be obese. Research findings from the University of Colorado's Centre for Human Nutrition show, that adipose tissue has to be considered as a separate body organ. It produces inflammatory cytokines and fatty acids – biologically active modules that lead to development of hypertension, coronary heart disease, stroke, type 2 diabetes or other illnesses. Marc-Andre Cornier, MD, explained that traditional monitoring of plasma glucose, HDL and LDL, triglycerides and HbA1C is still important. Genetic tests could provide a more complete picture in the future, but are not available yet.

AACC is expecting to grow even bigger between now and its next event, to be held in Washington, DC from 27–31 July 2008.

Virtual slide for real analysis

The updated Olympus dotSlide digital virtual microscopy system can scan entire slides at high resolution and fidelity, making them accessible and fully navigable anywhere in the world.

Using any of the three models – dotSlide MD (manual); dotSlide SL (fully automated, with slide loader), and dotSlide TMA (with a tissue micro-array module) – users can examine a virtual slide as if seeing the original through a microscope. This allows pathologists and researchers, for example, to review cases without being near a microscope. Second opinions become quicker, and remote consultations, training and discussion possible, Olympus points out. The technology also provides high throughput and high content capabilities.

The dotSlide models use the Olympus BX51 microscope. Whilst with the dotSlide MD, slides and data are loaded manually and a virtual file created automatically, based on the users preferences, the automatic dotSlide SL has a slide loader holding up to 50 slides in 5 trays. A robotic arm places the slides on to the stage holder and the integrated barcode scanner ensures any bar-coded meta-data are automatically loaded and linked with the resultant virtual image, Olympus reports.

In research

The fluorescence compatible dotSlide can be used for tissue micro-arrays (TMAs) via the dotSlide TMA model. This facilitates the acquisition and simple analysis of tissue micro-arrays. TMAs consist of many small tissue cores with defined diameter that are fixed on a single slide. The model documents each core separately, accurately recording its slide and core reference for traceability.

For technology

The dotSlide workstation and server system enable fully controllable remote access. Data and associated meta-data are saved in a bespoke data management system meaning that slides can be scanned in one location and reviewed almost instantaneously in another, anywhere in the world, by users either via a web browser.

Using the specialised OlyVia, software pathologists can review and comment on the virtual slide and are able to add annotations, markers and files (including dictations) to be directly linked to the slide. This software has many other assets and deserves to be followed up.

A Peltier cooled, 1376 x 1032 pixel dotSlide camera also offers high resolution, fast frame rates and very high sensitivity with an excellent signal-to-noise ratio, broad dynamic range and superior image quality.

analytica comes of age

21st in Munich in 2008

In the five halls of this international fair for instrumental analysis, laboratory technology and biotechnology lab workers will find just about everything they need. With three main exhibition categories – laboratory technology, analysis and quality control; life sciences and diagnostics for the laboratory sector – the event draws around 1,000 exhibitors (in just the biotech area there will be around 400). A few highlights will be sections dealing with nanotechnology, personalised medicine and biochips.

Personalised medicine – The effect of many medications varies from person to person. Molecular-biological diagnostics makes it possible to tailor therapies to patients' genetic profiles and modify medication dosages to suit an individual's metabolism. The show will focus on bioanalysis and diagnostics procedures that promise to make customised therapies possible.

Biochips – Personalised medicine revolves around DNA chips. A micro-array from Eppendorf, for example, will allow physicians to determine whether a patient should undergo radiation or chemotherapy after a lumpectomy – and which patients can skip those treatments. The breast-cancer chip has more than 200 genes that identify the type and stage of a tumour.

Biochips can also be used to improve AIDS therapy. In this case, the virus' ability to change is problematic because it can make active ingredients less effective. Biochips identify the types of resistances by analyzing the virus' genome. Medications that would be ineffective are not even considered.

Roche also has a gene chip that makes it easier to choose the optimum medication in the right dose. Its AmpliChip CYP 450 is now licensed for diagnostic purposes in the USA and Europe.

Genetic diagnostics is still reserved for specialised laboratories. However, as analytica promises to show, chip technology is becoming more user friendly. Detection kits with ready-to-use reagents, all-in-one concepts consisting of micro-arrays, hybridisation stations, scanners and analysis software as well as ongoing advancements in automation are making it easier for chip technology to be incorporated into routine clinical applications. Costs must also be considered, and there are already attractive alternatives to common fluorescence scanners; these detect hybridisation electrochemically or by precipitating silver onto gold nanoparticles

Identifying minor genetic defects

The fact that patients react differently to a given therapy despite a 99.9% genetic match is frequently due to single-nucleotide polymorphisms (SNPs, pronounced snips). A SNP is a minor defect in the script of the genetic mapping. Only a single letter, i.e. a base, is interchanged. Experts assume that there are ten million SNPs in the human genome. In many cases, SNPs are the cause of diseases.

The NGFN (Germany's National Genome Research Network), a group of researchers working in various fields, wants to use DNA chips to examine 25,000 patients and control people. Scientists want to identify the genetic causes of obesity, Alzheimer's, neurodermatitis, schizophrenia, tuberculosis and many other diseases.

Peter Nürnberg, Professor of Genomics at Cologne University and coordinator of the genotyping platform at the NGFN, and his colleagues, will collect over 20,000 individual samples. There are more than a half-million SNPs and other gene variations on the chips they use.

Such large-scale projects are only possible using state-of-the-art bioanalysis, molecular-biology and information-technology tools, and the latest of these – e.g. micro-array scanners with integrated barcode readers, and expanded bioinformatics software for analyzing and storing enormous quantities of data – will be at the Munich event.

Cost cutting

Protein chips are increasingly used to ascertain which genetic products, i.e. which proteins, actually affect a cell. Decoding proteins gives pharmacy researchers a point of departure for new active ingredients. Biomarker tests, which filter out unsuitable active-ingredient candidates before they are tested on patients, also help companies to cut costs considerably. Pharmaceutical companies also profit from the trend towards personalised medicine in another way: some blockbuster medications would still be on the market today if the patients who tend to have bad reactions for genetic reasons had been filtered out and treated using other alternatives.

Automation – Laboratory robotics, IT and efficient new analysis techniques are giving rise to large contract laboratories that can process customers' orders quickly and flexibly, the analytica organisers emphasise. 'An example in the biotechnology sector is PCR analysis: the latest techniques have made it possible for laboratories to work twice as quickly, resulting in a multitude of applications in infection diagnostics and food analysis.'

The Innovations Area – Alongside leading manufacturers, research institutes and small innovative companies are pushing progress, so analytica has created a section for start-up companies, university spin-offs, founder centres and research institutes to present their ideas to industry and a broad-based audience of specialists. They can book space to present their concepts, and utilise a Technology and Innovations Forum to further discuss innovations.

New: Education courses – For the first time analytica will hold education and training events for laboratory workers, as well as an Executive Roundtable where managers can discuss trends and topics in an auditorium with an audience of professionals.

The analytica Conference has long been a summit for cutting-edge research, and again there will be Job Day, and the analytica Forum – for 2008, renamed the Business & Markets Forum – which will feature presentations and panel discussions on economic-policy and business topics.

In 2008, about 30,000 visitors are expected – about a third of these from countries beyond Germany.

Details: www.analytica.de

PAEDIATRIC SURGERY: A MAJOR CHALLENGE

UK – A report on the care of young surgical patients has been launched by *The Children's Surgical Forum*, a body of representatives from the medical royal colleges, surgical specialist associations, Department of Health, Royal College of Nursing and the Royal College of Surgeons Patient Liaison Group.

Titled '*Surgery for Children: Delivering A First Class Service*', it recommends improvements in each surgical specialty, and provides a definitive guide on standards for those responsible for young patients, with information on safe models of care and service development. Recommendations range over the local and centralised (specialist) organisation of children's surgical services, as well as paediatric training, appropriate workforce planning, and considerably more essential information for paediatric units or children's hospitals.

David Jones FRCS, Royal College of Surgeons Council member and Chair of The Children's Surgical Forum, said that in the seven years since the Forum's first report, surgery for children has 'changed beyond recognition'. However, he pointed out that, although techniques have improved and more can be done for children, fewer hospitals can provide those services. 'We have reached a point where there are now major challenges facing surgical care for children.' Whilst routine surgery should be available locally, to achieve best outcomes, specialist services need to be centralised, David Jones added. Although there are excellent clinical networks in children's surgery, further developments of such networks are needed. 'However,' he pointed out: 'Current health policy reforms that introduce competition can provide a disincentive for Trusts to collaborate in the interests of the patient.' The report recommends that children's surgical services be protected from competition and commissioned separately. 'The report contains important messages for clinicians, support staff, service planners, commissioners and policy makers,' he said. 'We hope that our recommendations are implemented in each hospital with the help of lead clinicians for children's surgical services.'

Dr Jane Collins, CEO of Great Ormond Street Hospital, where the report was launched, commented: 'It is important that commissioners as well as CEOs of hospitals look at the report's recommendations.'

This report is timely: NHS healthcare delivery is currently under review. One important statistic: Although the estimated number of consultant paediatric surgeons needed in England is 256 by 2010, currently there are only 104.

Flexible endoscopy

Achieving precise power output and proven argon plasma coagulation

Professor Martin Raithel MD* works alongside medical devices manufacturer Bowa on the use of argon plasma coagulation in endoscopy. 'The argon unit, in conjunction with the generators of the Bowa ARC range, is working very reliably in different disciplines,' he says. 'It is opening up new methods in flexible endoscopy with argon-assisted electrosurgery due to its outstanding ignition and power characteristics.'

Internal medicine specialist Martin Raithel is Assistant Medical Director of Medical Clinic 1, at Friedrich Alexander University, Erlangen-Nuremberg, and heads the Endoscopy department; the Functional Tissue Diagnosis Laboratory, and the clinic for chronic inflammable and allergic intestinal diseases.

Many publications have already appeared relating to the outstanding characteristics of ARC generators in conjunction with the *ARC Plus*, Bowa points out. 'Like its big brothers in the ARC series, in conjunction with the *ARC Plus*, the *Bowa ARC 200* makes an unbeatable system. An unbelievably low 10 Watt power setting enables argon plasma coagulation to be carried out safely and with particularly fine dosing. The penetration of argon plasma coagulation can therefore be almost steplessly controlled. In this way, efficient coagulation can be produced even more safely in areas that are sensitive to perforation, such as the small intestine, for example. Stuck electrodes and mechanical traumas are avoided thanks to the non-contact process.'

In gastroenterology the process is particularly suitable for polypectomy, papillotomy, double-balloon enteroscopy, coloscopy, mucosectomy, rectoscopy and gastroscopy (Bowa provides the various flexible probes).

'To guarantee reliable argon ignition, the ARC Plus argon coagulation unit and the ARC generators are optimally matched to one another. The wide argon gas control range of 0.1 l to 9.5 l/min allows the system to be ideally adapted to the type of operation,' Bowa adds. 'Argon plasma coagulation can be used with rigid or flexible probes. Power settings from 1 Watt to 120 Watt are possible.'

The *Argon-Flex*, *GastroCut Pap* and *GastroCut Pol* programmes are provided for flexible endoscopy, and the unit has an argon programme for open or laparoscopic surgery.

'The combination of cutting and coagulation current achieves optimum results when using polypectomy loops or papillotomes,' Bowa points out. In addition, the haemostasis effect of the cutting current can be finely controlled at the press of a button.

** 'Applicability, effectiveness and safety of Bowa generators and argon units in gastroenterological endoscopy', by M Raithel; J Hänsler and EG Hahn of University Clinic Erlangen, and A Nägel of Bowa-electronic, published in Endoscopy today 3/06.*

Главные темы конгресса

стволовые клетки

Терапевтические возмо жности взрослых стволовых клеток в лечении сердечно-сосудистых заболеваний.

Инфаркт миокарда характеризуется ишемией и утерей тканей сокращающихся мышц сердца. Последствием является сердечно-сосудистая недостаточность. Лечение при помощи аутологичных стволовых клеток, взятых из ткани костного мозга, входит в практику и имеет целью восстановить сердечную мышцу при помощи инъекций в нее стволовых клеток.

Методика трансплантации в район, пораженнный инфарктом, был разработан в Дюссельдорфе профессором Шртауэром. После реканализации пораженного инфарктом сосуда методом баллонной диллятации в него под низким давлением вводятся стволовые клетки.

Последующий контроль показывает долговременное улучшение сердечной функции в среднем в 50% случаев и уменьшение размеров инфаркта примерно в 20% случаев. Снабжение сердечной мышцы кровью значительно улучшается, улучшается также метаболизм, увеличиваются физические силы. Результаты были подтверждены по всему миру, до настоящего времени не поступало сообщений о побочных эффектах.

Аналогичная процедура также эффективна при заболевании периферических артериальных сосудов.

(См. страницы: 10)

Штефан П. Янссенс, др.мед, др.фил.

Трансплантация стволовых клеток помогает восстановить сердце

Штефан П. Янссенс, доктор медицины, доктор наук, работающий в отделении кардиологии университетского госпиталя Гастхюисберг, (Католический университет г. Лейвен, Бельгия), рассматривает пересадку стволовых клеток для лечения поражений сердца как многообещающий путь развития в кардиоваскулярной медицине. Рандомизированные, плацебо-контролирумые, с двойной степенью анонимности проведенные исследования результатов пересадки автологичных стволовых клеток костного мозга пациентам с инфарктом миокарда дали показатели улучшения степени восстановления общей функции левого желудочка от 1,2% до 2,5% . Данный результат сопровождается благоприятным эффектом на перфузию миокарда, а также ремоделированием инфаркта с значительным его уменьшением и улучшением восстановления регионарной функции левого желудочка.

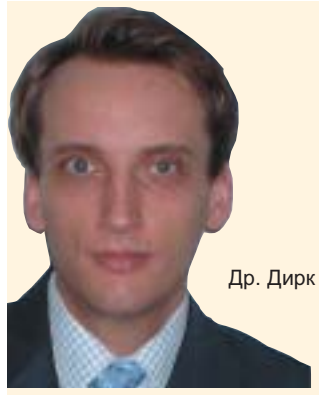
Если прогресс общего восстановления функций может показаться скромным, тем не менее он представляет собой улучшение результатов почти такого же уровня, как и начальные терапевтические результаты от первичной коронарной реваскуляризации.

Убедительные данные, полученные в результате исключительно обширных, рандомизированных, с двойной степенью анонимности исследований показали, что пациенты , страдающие значительным снижением функции миокарда, получают пользу от приостановленной в настоящее время стратегии пересадки клеток.

(См. страницы: 10)

Московская медицинская выставка-ярмарка

Четырёхдневная выставка пройдёт в этом году с 19 по 22 сентября в выставочном центре Манежа. На выставке представлен большой выбор медицинских центров, санаториев и массажных центров как из России, так и из других стран. www.mosmedsalon.ru



Др. Дирк Бёзе

Абсорбируемые металлические стенты – за и против.

Коронарные стенты укутывают стенки сосуда, тем самым обеспечивая их защиту от диссекции, и уменьшают вероятность рестеноза после проведенной подкожной транслуминальной коронарной ангиопластики. В дополнение к этому, стенты транспортируют в организм лекарственные средства. Так, заряженные антипролиферативными веществами, они препятствуют интимальной гиперплазии и, таким образом, еще в большей мере противодействуют возникновению рестеноза.

Дирк Бёзе, доктор медицины Западногерманского Кардиологического Центра, (отделение кардиологии, Университет Дуйсбург-Эссен), утверждает, однако, что стенты являются инородными телами, которые превращают эластичные сосуды в ригидные трубки, причиняют вред вазомоторике, что их применение вызывает необходимость в долговременной противотромбозной терапии из-за существующего риска возникновения тромбов впоследствии.

С целью преодоления ограничений современной технологии стентирования был разработан абсорбируемый металлический стент из сплава на основе магния (AMS). Эффективность абсорбируемых металлических стентов при лечении коронарных артериальных стенозов была определена в результате клинических испытаний PROGRESS-AMS. Эти исследования подтвердили концепцию, согласно которой саморазлагающиеся биологическим путем магниевые стенты могут быть столь же эффективны в плане достижения лечебного результата, как и другие металлические стенты, но в течение 4 месяцев полностью самоуничтожаются, не причиняя вреда организму.

(См. страницы: 8)

МЕЖДУНАРОДНАЯ ШКОЛА ТЕЛЕМЕДИЦИНЫ В РОССИИ

Российская ассоциация телемедицины и Департамент здравоохранения ОАО «РЖД» организуют обучение в IX Международной школе по теме «Современные аспекты телемедицины». Занятия будут проводиться с 16 по 26 октября 2007 в Москве (руководитель школы Л.В. Столяр)

В течение 10 дней для слушателей школы из РФ и стран СНГ будет предложен 72-часовой курс теоретических и практических занятий по телемедицине и современным медицинским информационным технологиям. Лекторы - ведущие российские и зарубежные специалисты. Обучение рассчитано на организаторов работы телемедицинских центров (врачей) и технический персонал, обеспечивающий работоспособность оборудования и каналов связи телемедицинского центра.

Обучение проводится на русском языке. Лекции зарубежных специалистов будут сопровождаться синхронным переводом. В ходе школы планируется проведение серии круглых столов по проблемам использования телемедицинских технологий и медицинских информационных систем, демонстрация новых технологий и оборудования.

Часть лекций проводится на базе видеоконференцсвязи. По этой же технологии будет заслушан ряд сообщений российских и зарубежных телемедицинских центров об опыте использования телемедицинских технологий.В ходе обучения слушатели школы с помощью консультантов должны будут подготовить и защитить реальные проекты телемедицинских центров, предусматривающие полноценное взаимодействие с информационными системами клиник.

Основные направления работы школы состоят в изучении:

- современных средств телекоммуникации, применительно к задачам телемедицины;
- современные системы видеоконференцсвязи (стационарные и мобильные);
- методы и средства обеспечения конфиденциальности видеоконсультаций;
- стандарты медицинской информатики и телемедицина;
- медицинское оборудование телемедицинских центров;
- экономика телемедицины;

и ряд других направлений тем не менее важных и интересных

Научными консультантами школы являются:

Президент российской ассоциации телемедицины, вице-президент ОАО «РЖД», профессор Атьков О.Ю. (Россия)

Президент итальянской ассоциации телемедицины профессор Ф.Сикурелло (Италия)

Президент международной ассоциации телемедицины, профессор регенсбургского университета М. Нерлих (Германия)

Президент ассоциации прикладных технологических сетей, профессор М.Чермак (Швейцария)

Контакт:
Наш адрес и телефон:
Рублевское шоссе д. 135
121552 г. Москва
Россия
тел./факс:
007495 414-79-34
E-mail:Telemd@ntt.ru

IT - Решения

Вхождение в корпорацию «Onex» обещает придать большую гибкость фирме, занимающейся получением медицинской графической информации, а также информационными решениями

Кевин И. Хоберт, CEO of Carestream Health Inc

Недавно, в результате приобретения корпорацией «Onex» группы «Health», принадлежавшей ранее фирме «Kodak», начала свою деятельность фирма «Carestream Health Inc.» в качестве одной из ведущих в мире независимых компаний по получению медицинской графической информации и разработки информационных систем.

Кевин Дж. Хоберт, Генеральный директор фирмы «Carestream Health Inc.», разъясняет: « Наш переход в разряд независимых компаний не меняет принципов нашего подхода к обслуживанию клиентов. Благодаря этому, мы получили в настоящее время невероятно хорошие возможности инвестировать в будущее, основываясь при этом на всей нашей предыдущей работе по внедрению инноваций. Мы хотим перевести наших клиентов от бумаги и пленки к полностью дигитальному процессу работы, и благодаря этому переходу, помочь им улучшить качество и уменьшить затраты».

Кевин Хоберт подчеркнул также: «Наши достижения в получении изображений на молекулярном уровне очень существенны, мы можем предоставить не только фотопленки и фотохимикаты, но также дигитальные графические системы и контрастные средства, необходимые для получения графической информации. Мы настроены более чем оптимистично в отношении наших будущих возможностей», добавил в заключение Хоберт.

(См. страницы: 20)

Позвольте представиться - SanaFontis

Частная онкологическая клиника SanaFontis во Фрайбурге основана в апреле 2006 года и располагает 85 койками разных категорий и возможностью размещения сопровождающих лиц.

Клиника SanaFontis представляет собой международный центр современной терапии рака и научных клинических исследований, базирующихся на компетенции и профессионализме. „Мы используем не только актуальные методы терапии рака, но и открыты для инновационных подходов к лечению и применению дополнительных методов. Наряду с самыми современными программами лечения и новейшим диагностическим оборудованием, приоритетом для нас является заботливое обхождение с нашими пациентами, подчеркивает медицинский директор клиники, профессор доктор Йоахим Древс.

Наша главная задача - лечение пациентов с большими опухолями, лимфомами и определенными видами лейкоза на базе обширной и целостной программы. При этом в центре внимания стоит не заболевание, как изолированное событие, а человек.

Международная группа врачей предлагает лечение пациентам из разных уголков мира, в том числе и русскоязычным пациентам.

Мы работаем с перспективными технологиями - от современной лабораторной медицины для определения биомаркеров, до использования тестов на чувствительность к химиотерапии и основательно проводим медицинское обследование, - например при помощи диагностического томографа ПЭТ/КТ.

В зависимости от индивидуальных показаний мы назначаем химиотерапию, гормонотерапию или облучение. При прогрессировании раковых заболеваний мы используем по желанию пациентов новые методы терапии - такие как анти ангиогенез (блокирование опухолевых сосудов) или иммунотерапию.

Часто проходят десятилетия, прежде чем новые медикаменты получают доступ в практическую медицину. К сожалению, пациенты, страдающие раком, не могут так долго ждать. Поэтому мы, в рамках клинических исследований, предоставляем в распоряжение наших пациентов инновационные медикаменты.

Специальная программа питания с использованием нутриентных микрокомпонентов предотвращает истощение организма; традиционная китайская медицина укрепляет сопротивляемость и снижает боли; физиотерапия возвращает силу и выносливость; психоонкологическая поддержка помогает вернуть жизнерадостость.

Контакт
Tumorklinik SanaFontis,
An den Heilquellen 2,
79111 Freiburg
Mail: medinfo@sanafontis.com
www.sanafontis.com

READER SURVEY –
имеется возможность интересного выигрыша!

Хотели бы Вы выиграть великолепный короткий отпуск, включающий так называемую Fit4Work-диагностику менеджера и VIP-билеты для посещения футбольного матча Лиги чемпионов УЕФА с участием футбольного клуба FC Schalke 04 в г. Гельзенкирхене, Германия?

При содействии клиники **medicos.AufSchalke**, которая является официальным партнёром футбольного клуба FC Schalke 04 в области физической подготовки и контроля за состоянием здоровья игроков, мы проводим розыгрыш первокласного отпуска для 2 человек: Вы проведёте две ночи в 4-х звёздочном отеле Courtyard by Marriot, окруженные всем необходимым. Днем Вы можете насладиться Fit4Work-Premium диагностикой в клинике medicos. Auf Schalke – междисциплинарном центре компетенции здоровья. Вечером Вам предстоит увидеть интереснейший футбольный матч Лиги чемпионов УЕФА из VIP-ложи клиники medicos на стадионе Veltins Arena.

Условия участия в розыгрыше:
Условия участия в розыгрыше: если Вы заполните прилагаемый формуляр и привлечёте в качестве читателя нашей газеты одного из Вашиз коллег, выполняющего врачебную или организаторскую функцию в Вашей клинике, тогда Вы являетесь участником розыгрыша.

последний срок отправки 31 октября 2007 г.

Члены редакции газеты EUROPEAN HOSPITAL участия в розыгрыше приза не принимают. Правовые претензии не принимаются.

Пожалуйста заполните купон и отправьте его в наш адрес:
по факсу: +49 201 87126 864
по почте: EUROPEAN HOSPITAL Verlags GmbH, Theodor-Althoff-Str. 39
45133 Essen, Germany
e-mail to:sb@european-hospital.com

Пожалуйста укажите Ваше имя и адрес

Клиника/фирма:
Фамилия:
Должность:
Улица:
Почтовый индекс: Город: Страна:
Номер телефона: Номер факса:
e-mail:

Пожалуйста укажите имя и адрес Вашего коллеги, который хотел бы получать газету EUROPEAN HOSPITAL

Клиника/фирма:
Фамилия:
Должность:
Улица:
Почтовый индекс: Город: Страна:
Номер телефона: Номер факса:
e-mail:

Молекулярная медицина в качестве оружия против склеротических бляшек высокого риска

Пауль Смит, Philips Medizin Systeme

Часто не размер бляшки в коронарном сосуде, но степень ее стабильности определяет, насколько высок риск возникновения инфаркта миокарда. Инициатива «Склеротические бляшки высокой степени риска» *(High-Risk Plaque Initiative),* основанная совместно фирмами «Philips Medizin Systeme», «AstraZeneca», «Merck & Co», «BG Medicine» и «Humana» фокусируют свои усилия на возможностях, которые открывает молекулярная медицина. Исследователи пытаются найти подходящие биомаркеры, которые позволили бы рано диагностицировать и проводить целевую терапию воспаленных, так называемых опасных бляшек.

Неожиданный разрыв такой нестабильной воспаленной бляшки происходит без первичных симптомов в 70-75 процентов случаев инфарктов миокарда.

Поль Смит, ответственный за вопросы стратегии и развития фирмы «Philips Medizin Systeme», объясняет: «Потребуется примерно четыре года, прежде чем мы сможем идентифицировать опасные бляшки при помощи биомаркеров. Ранняя диагностика могла бы способствовать сокращению последующих затрат и открыть новые возможности терапии во благо пациентов.»

(См. страницы: 16)

Диагностика артеросклероза и визуализация склеротических бляшек:

Магнитно-резонансная томография открывает новые перспективы в кардиологии

Профессор Бернд Хамм

Магнитно-резонансная томография обеспечивает очень широкие диагностические возможности для кардиологии.

Профессор Бернд Хамм, Институт радиологии клиники Шаритэ, Берлин, разъясняет возможности этой методики получения изображений:

«Магнитно-резонансная томографическая технология новейшего уровня обеспечивает ангиографию всех сосудов организма и открывает возможности для визуализации всех сосудов человеческого тела неинвазивным методом. Мы проводим фундаментальные исследования в области получения медицинской графической информации на молекулярном уровне с целью визуализации и дифференциации стабильных и нестабильных атеросклеротических бляшек. Рабочая группа по нанотехнологиям, созданная для сотрудничества в исследованиях между «Шаритэ» и фирмой «Сименс», работает с мельчайшими металлическими частичками. Эти частички могут сделать нестабильную бляшку видимой на магнитно-резонансном томографе. Мы можем обеспечить анализ степени риска с очень высокой точностью.

Мы осуществляем также важные исследовательские проекты, связанные с компьютерной томографией - мы работаем с 64-срезным компьютерным томографом, способным очень надежно визуализировать коронарные сосуды. Мы предполагаем достичь огромного прогресса в медицинской компьютерной графике в области кардиологии уже в ближайшем будущем, и это позволит нам обеспечить более раннюю и точную диагностику заболеваний.»

(См. страницы: 8)

Специалисты по лечению печени, желудка, кишечника и поджелудочной железы

Лечение в Университетской клинике Гамбург-Эппендорф (UKE), Германия

Количество злокачественных заболеваний печени, желудка, поджелудочной железы и кишечника в последнее время постоянно растёт. Данное обстоятельство требует проведения быстрой, высокоспециализированной и комплексной терапии в клиниках.

Университетская клиника Гамбург-Эппендорф одна из крупнейших и одна из лучших клиник в Германии и в Европе. Центры клиники по лечению вышеуказанных болезней возглавляются директорами, которые известны во всём мире благодаря своим блестящим работам.

Профессор Нашан является одним из ведущих специалистов в мире по лечению всех заболеваний печени. Воспаления и раковые заболевания печени, желчного пузыря и протоков часто требуют хирургического вмешательства, а иногда и трансплантации печени. Центр трансплантации университетской клиники разработал специальную технику проведения операций, в ходе которых осуществляется пересадка органов (почек) или их частей (печени). В большинстве случаев донорами являются родственники больных, что не вызывает отторжения пересаженных органов. Пациенты, получившие таким образом органы могут вести нормальную жизнь.

Профессор Избики известный во всём мире специалист по лечению заболеваний желудка, кишечника и поджелудочной железы. Необходимые операции, вызванные раковыми заболеваниями, должны проводиться такими специалистами как профессор Избики. Междисциплинарное клиническое сотрудничество различных Центров клиники Гамбург-Эппендорф, как например Онкологической клиники (хемотерапия) и Радиоонкологии (лучевая терапия) позволяет вести систематическую борьбу с болезнями и значительно повывышает шансы на выздоровление

Клиника Гамбург-Эппендорф обладает наибольшим опытом в лечении пациентов из других стран. Международный оффис клиники решает все организационные вопросы с иностранными пациентами на их родном языке. Сюда входит широкий круг вопросов по въезду в Германию, финансовые вопросы, определение стоимости медицинского обслуживания, согласование сроков, подготовка медицинских заключений и оформление МРТ/КТ - рентгенологических обследований в клинике на русском языке.

В Международный оффис Клиники можно позвонить 24 часа в сутки каждый день по телефону:
+ 49 40 42803 7294,
E-Mail:
patients@uke.uni-hamburg.de
или отправить факс по номеру: +49 40 42803 1691.

Шарите - Крупнейшая университетская клиника Европы

Университетский медицинский комплекс г. Берлин

Университетский медицинский комплекс ШАРИТЕ – это в целом 3500 койкомест и 15.000 сотрудников в 80 специализированных клиниках, каждая из которых является высококвалифицированной единицей. Будучи учебной и научной базой знаменитых Берлинских университетов имени Гумбольдта и Свободного Университета мы, образно говоря, концент-рируем диагностику и лечение, научные исследования и обучение под одной крышей.

Медицинская исследовательская работа и использование ее результатов являются душой университетского медицинского комлекса ШАРИТЕ. Около 55 научно-исследовательских институтов, относящихся к ШАРИТЕ, в том числе такие знаменитые учреждения как Институт инфекционной биологии им. Макса Планка, Институт им. Роберта Коха и Институты микробиологии и вирусологии ШАРИТЕ обеспечивают нашим пациентам и впредь медицинское обслуживание высочайшего класса.

Ни в одной другой клинике Европы нет такого средоточия известных врачей, специалистов и корифеев, как в Университетском медицинском комплексе ШАРИТЕ. Соответственно превосходным является и оснащение медицинской техникой. Взаимодействие между различными специальностями, комплексная медицина, коллегиальность и, конечно же, высочайшая квалификация всего врачебно-профессорского состава обеспечивают медицинское обслуживание высшего качества.

Главное в ШАРИТЕ – это здоровье и хорошее самочувствие наших пациентов. Личные консультации и доступная для понимания информация важны для нас так же, как и индивидуальное обслуживание пациентов. При этом международный коллектив врачей и медсестер учитывает, разумеется, культурные традиции и религиозную направленность иностранных пациентов.

Для организационной поддержки Вашего стационарного лечения в ШАРИТЕ обращайтесь, по-жалуйста, в наш офис „Charité International“. Сотрудники этого центра консультации и оформления иностранных пациентов позаботятся о Ваших медицинских проблемах, а также обо всех юридических и административных формальностях - разумеется при соблюдении строжайшей конфиденциальности.

Для оценки возможности лечения в ШАРИТЕ нам нужна как можно более подробная и – что очень важно – самая последняя мединская информация о Вас (выписка из истории болезни). Эту информацию Вы можете прислать нам по факсу, электронной или обычной почтой. Исходя из полученных документов, мы сразу же сообщим Вам наши представления о целесообразности дальнейших мер.

При необходимости стационарного лечения Charité International вышлет Вам в самый возможно короткий срок индивидуальное предложение. В нем содержится сообщение о расходах на лечение и уход, а также о максимальном времени пребывания в нашей клинике.

Гостиница Вирхов-Гестехаус находится непосредственно на территории клиники им. Рудольфа Вирхова университетского медицинского комплекса ШАРИТЕ. В 22-х современных номерах гостиницы с предоставлением завтрака могут разместиться наши пациенты и сопровождающие их лица. Конечно же, мы охотно поможем Вам в поиске другой гостиницы на Ваш вкус.

Контакт:
Charité International
Augustenburger Platz 1
13353 Berlin – Germany
www.charite.de/international/
Email:
charite.international@charite.de
Tel: +49 30 / 450 570 000
Fax: +49 30 / 450 570 977

Профессор Джованни Баттиста Мильори, доктор медицины, сотрудник Центра по контролю лечения туберкулеза и легочных заболеваний при Всемирной организации здравоохранения ВОЗ сообщает, что на глобальном уровне показатели регистрации заболеваний туберкулезом возрастают в среднем на 1% в год.

Несмотря на то, что стратегия DOTS значительно улучшила за последние 10 лет контроль над заболеваемостью туберкулезом, количество заболеваний увеличивается в странах Африки, прилегающих к Сахаре, а также в странах бывшего Советского Союза. При этом отмечается существенное превалирование случаев заболевания туберкулезом с множественной лекарственной устойчивостью к противотуберкулезным препаратам, а также туберкулезом с расширенной лекарственной устойчивостью к противотуберкулезным препаратам.

С января 2006 года начал осуществляться новый глобальный план антитуберкулезных мероприятий, рассчитанный на 2006-2015 гг. Этот план описывает стратегию, финансовые потребности, а также существующие узкие места и имеет в виду достижение в данной области во всех регионах мира целей развития, поставленнных в Декларации Миллениума ООН.

Международные стандарты защиты от туберкулеза (ISTC) имеют своей целью облегчить эффективное оказание высококачественной медицинской помощи всем пациентам без различия возраста и пола. Это 6 стандартов по диагностированию, 9 стандартов по лечению и 2 стандарта, относящиеся к обязанностям органов общественного здравоохранения.

проф. Джованни Баттиста Мильори

(См. страницы: 22)

Дыхание

Международные стандарты защиты от туберкулеза (ISTC)

ADVERTISERS INDEX

Company	Page	Products/focus
Advanced Instruments	1	Lab equipment
Agfa	3	IT solutions –imaging
Aloka	13	Ultrasound Equipment
BOWA	7	HF equipment
Cardiac Science	17	Cardiology products
Carestream Health	5	Digital mammography
Charité	29	University Hospital Berlin
Detecto	27	Scales
ERS	32	European Radiology Society
GE	11	Diagnostic mammography solutions
UKE	28	University Hospital Hamburg Eppendorf
MEDICA	18/19	World Forum for Medicine
Metsä Tissue	12	Hygiene equipment
Sanafontis	31	Private Clinic Freiburg
Schiller AG	15	Cardiac diagnostic solutions
Seca	25	Scales
Siemens Medical Solutions	9	Diagnostic imaging solutions

EUROPEAN HOSPITAL

EUROPEAN HOSPITAL Publisher,
Theodor-Althoff-Str. 39, 45133 Essen, Germany
Phone: +49 (0)201 87 126 850
Fax: +49 (0)201 87 126 864
e-mail: info@european-hospital.com

www.european-hospital.com

Editor-in-Chief Brenda Marsh

Art Director Mary Pargeter

Executive Directors Daniela Zimmermann, Reiner Hoffmann

Managing Editor Denise Hennig

Editor Meike Lerner

Russian Supplement Sergey Bezrukov, **Fibrotex GmbH,** Fischerstr. 1, 40477 Düsseldorf, Tel: +49 211 550 49 70, Fax: +49 211 550 49 710, e-mail: fibrotex@gmx.net

Founded by Heinz-Jürgen Witzke

Correspondents
Austria: Christian Pruszinsky. ***Baltic***: Andrius Vagoras. ***Czech Republic***: Rostislav Kuklik. ***France***: Jane MacDougall, Keith Halson. ***Germany***: Anja Behringer, Annette Bus, Guido Gebhardt, Heidi Heinhold, Max Heymann, Holger Zorn. ***Great Britain***: Brenda Marsh, Ian Mason. ***Italy***: Danilo Camisasca. ***The Netherlands, Belgium***: Michiel Bloemendaal. ***Poland***: Pjotr Szoblik. ***Spain***: Eduardo de la Sota. ***USA***: Karen M Dente, Cynthia E Keen, Ivan Oransky, Craig Webb.

UK editorial address
55 Wey Meadows,Weybridge, Surrey KT13 8XY

Subscriptions
Janka Hoppe, European Hospital, Theodor-Althoff-Str. 39, 45133 Essen, Germany

Subscription rate
6 issues: 42 Euro, single copy: 7 Euro. *Send order and cheque to*: European Hospital Subscription Dept

Finishing media technique jöhri, Weilerswist, Germany

Printed by Frotscher Druck, Darmstadt, Germany

Publication frequency bi-monthly

European Hospital ISSN 0942-9085

A member of VVA HealthCare Group

Representatives
Germany, Head Office
European Hospital, Theodor-Althoff-Str. 39, 45133 Essen, Germany
Tel: +49 201 87 126 851-852, Fax: +49 201 87 126 864
e-mail: dz@european-hospital.com

GB, Scandinavia, BeNeLux, France
Simon Kramer, Willem Alexander Plantsoen 25, 2991 NA Barendrecht
Tel:/Fax +31 180 6200 20
e-mail: sk@european-hospital.com

China & Hongkong
Sun China Media Co., Ltd, Gavin Hua, Room 802, 15th Building, BinJiang Residential Quarter, Dongyuan Road, Futian District, Shenzhen, Guangdong, China, Code: 518031
Tel: +86-0755-81 324 036
e-mail: gh@european-hospital.com

Israel
International Media, Dep. of El-Ron Adv. & PR Co., Ltd., Hannah Wizer, 7, Leteris street, Tel-Aviv 64166, Israel
Tel: +972-3-6 955 367, Fax: +972-3-6 950 502
email: hw@european-hospial.com

Japan
Echo Japan Corporation, Tetsuzo Asoshina, Grande Maison Room 303
2-2 Kudan Kita, 1 Chome Chiyoda-Ku
Tokyo 102, Japan
Tel: + 81 3 3263 5065, Fax: +81 3 3224 2064
e-mail: ta@european-hospital.com

South Korea
Far East Marketing Inc,
CH Park,
Room 103-1011, Brown Stone,
1330, Baekseok-dong, Ilsan-ku,
Goyang-si, Gyunggi-do, Korea 410-360
Tel: +82 2 730 1234, Fax: +82 2 732 8899
e-mail: ch@european-hospital.com

Taiwan
Jurassic Communications Corp., Ben Chen,
10th Floor-4, No 235, Chang Chuen Road,
Taipei 10479, Taiwan R.O.C.,
Tel: +886 2 2503 8028, Fax: +886 2 2503 2385
e-mail: bc@european-hospital.com

USA & Canada
Media International, Hanna Politis, 8508 Plum Creek Drive, Gaitherburg, MD 20882, USA
Tel: +1 301 8696 610, Fax: +1 301 8696 611
email: hp@european-hospital.com