EUROPEAN HOSPITAL

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South Eastern Europe is facing an imminent public health crisis that can be averted only by urgent intervention, according to a new report published by the Open Society Institute, the London School of Hygiene and Tropical Medicine, the United Kingdom Department for International Development, and UNICEF.

Europe SE Urgent warning

'Stability hinges on better public health'

The report, '*Healing the crisis: a prescription for public health action in South Eastern Europe*', outlines the need for increased attention to the region's failing health infrastructure. Prospects for rebuilding a functioning public health care system have never been better, as for the first time in history, the countries of South Eastern Europe all enjoy democratically-elected governments that are open to reform and keen to join the European Union, the report points out. The international community has invested billions of dollars to bring peace, and help reconstruct the region and build public institutions. 'Too much effort has gone into rebuilding South Eastern Europe to allow the public health system to fall through the cracks,' said Open Society Institute Chairman George Soros. 'With a minimum amount of funding, the state of health in the region can be turned around.'

South Eastern Europe - including Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Moldova, Romania, Serbia and Montenegro, and the UN-administered province of Kosovo - is emerging from a painful decade of transition, the report points out. 'The collapse of communism, wars, instability and organised crime have exacted a huge toll. Poverty is widespread, drug use is on the rise, and the health disparities between South Eastern Europe and EU countries are stark. People in Moldova, for example, can expect to die ten years earlier than their counterparts in the EU while in Romania, the death rate is six times higher than in the EU.'

'The health sector in South Eastern Europe is too often ignored,' said Professor Martin McKee of the London School of Hygiene and Tropical Medicine, one of the report's authors. 'Yet the region must not be forgotten. Without a healthy population, the region cannot move forward. Improving public health will help ensure that it becomes a vital contributor to Europe.'

The report calls for increased capacity to overcome health challenges at the national, district and local levels, and emphasises the need for a more comprehensive public health model that incorporates a preventive approach.

The establishment of country-level public health plans, funded by central governments and developed by multidisciplinary teams, which include civil society organisations, are recommended in the report, which also gives recommendations on how to

- re-orient training for health professionals
- implement reliable surveillance and health information systems
- target health promotion efforts to engage and empower the public
- improve health care delivery systems so that the entire population has access to basic health services
- develop mechanisms for sharing best practices.

Full report: www.lshtm.ac.uk/ecohost/see/index.htm

IN BRIEF

10,000 die in French heatwave

CHIRAC CALLS FOR INQUIRY

FRANCE - When figures indicating that about 10,000 people died during August's 10-day heatwave, President Jacques Chirac called an emergency cabinet meeting and initiated an inquiry to examine the failings of his country's health system.

About 50% of those who died were thought to have been living in old people's homes. A further 2,000 were said to have died of dehydration at home, without help from vacationing neighbours.

It was reported that many hospitals had closed wards for August - and some had over 30% of medical staff away - making the hospitals incapable of providing even basic treatments, such as cooling heat victims with damp sheets and drinks. An A&E doctor told the newspaper Liberation about patients lying in corridors near locked wards. Some of these had a body temperature of 42 degrees centigrade but could be given only a little comfort.

Although Dr Jean-Francois Mattei, the French Health Minister, said he was not given sufficient warning, senior health officials contradict this by saying ministers were warned, early in the month, that there could be a catastrophe, and Bernard Kouchner, a founder of Medecines sans Frontiers and former Socialist Health Minister, said this was a 'disaster waiting to happen'.

France spends 9.9% of its GNP on healthcare - i.e. one in ten of every euro - higher than Europe's average.

Pain: skin patches accelerate costs

Report by Anja Behringer

The annual 15 million euros cost for pain therapy in Austria has increased disproportionally (> 500 %) since transdermal patches were introduced. This phenomenon prompted British scientists to compare transdermal and oral palliative pain therapy costs. Gathering data from 999 tumour patients (drawn from the national register), costs were analysed for different pain therapies from their beginning to the patients' deaths. All costs, including in- and out-patient care, and the costs related to palliative care, were considered. The opioids evaluated are a 12-hour retard morphine (in Austria: Mundidol retard) and transdermal fentanyl (Durogesic) with 2-3-days delivery. The patients were categorized in four groups and there were no statistically significant differences in ages and tumour profiles.

The results - presented at the recent World Pain Congress in San Diego - are surprising. The average monthly costs of transdermal applications were £2,067 - considerably higher than the £528 for orally administered retarding morphine-therapy. Apart from higher costs for hospital care, the difference lay mainly in the price of transdermal fentanyl. In addition, transdermal therapy often requires additional medication, such as laxatives and anti-emetics, which, along with stomach and NSAID-medications, are prescribed far less often during oral regimes - despite claims to the contrary, constipation occurs much more often in patch therapies. The patients receiving oral treatment visited their physicians just 1.44 times a month, whilst the transdermal patients made 2.81 visits monthly. A further cost factor is the use of a specialised nurse: 0.52 visits in the oral group compared with 1.01 visits in the transdermal group.

According to the British study, patients in advanced tumour stages are not treated adequately. Not even a third of these received 4-hour morphine with the basic medication, although this is recommended in the national therapy guidelines. But better cost-efficiency is not the only advantage of oral pain therapies: their effect is much quicker and they are more easily controlled, because they don't require complex dose titration procedures. Transdermal systems, can take 12 hours to show any effect and the maximum effect occurs after 24 hours.

Opioid patches enjoy a 'healing image' and patients consider them harmless - therefore, many physicians prescribe them on demand. But there is a dangerous lack of information on the risks of the patches: a transdermal therapy system with fentanyl contains an opioid that is up to 100 times stronger than morphine.

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ESPECIALLY FOR DOCTORS:
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In which department do you work?
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Are you in charge of your department's budget? ☐ Yes ☐ No

How much influence do you have on purchasing decisions?
I can only present an opinion ☐ Yes ☐ No
I tell the purchasing department what we need ☐ Yes ☐ No
I can purchase from manufacturers directly ☐ Yes ☐ No

Do you consider that your equipment is
out-dated ☐ Yes ☐ No
relatively modern ☐ Yes ☐ No
state-of-the-art ☐ Yes ☐ No

Do you use/buy second-hand equipment? ☐ Yes ☐ No
If so, what do you use of this kind?

Is your department linked to an internal computer network? ☐ Yes ☐ No
Is your department linked to an external computer network? ☐ Yes ☐ No
Is your department involved with telemedicine in the community? ☐ Yes ☐ No
Do you consider your department is under-staffed? ☐ Yes ☐ No
Are you given ample opportunities to up-date knowledge? ☐ Yes ☐ No
Do you attend congresses or similar meetings for your speciality? ☐ Yes ☐ No

This information will be used only in an analysis for European Hospital, Höherweg 287, 40231 Düsseldorf, Germany, and for the mailing out of future issues of the Beta publication European Hospital. Candidates will also be automatically entered for a draw to win the prize featured on this page.

Signature Date EH 4/03

Bio-engineering

$5 million for tissue engineering research

USA - The University of Pittsburgh's McGowan Institute for Regenerative Medicine has been awarded a grant of almost $5 million, by the National Institutes of Health (NIH) for research aimed at developing unique tissue-engineered solutions for heart disease - which include a tissue-engineered cardiac 'patch' and tissue-engineered blood vessels to be used surgically after cardiac or other cardiovascular events.

In the projects, stem cells from muscles or bone marrow are held within a flexible, permeable, non-toxic polymer that is biodegradable at a stable rate. This is to be used as a temporary 'scaffold', while new, healthy own-body tissue develops in situ.

'We are working on ways to grow tissues that will not just be similar to our own, in terms of make-up, but which will also be mechanically strong and functional. To do this, we will need to train the tissue as it develops for the role that it will ultimately assume,' explained the project's principal investigator William Wagner PhD, Associate Professor of Surgery and Bioengineering at the university and Associate Professor of chemical and petroleum engineering at the university's School of Engineering.

The tissue development, involving the university's tissue engineering, stem cell biology and imaging departments, is aimed at replacing blocked arteries and helping the body to regenerate its own damaged cardiac areas, increasing cardio-muscular strength, Dr Wagner pointed out. The 'patch' aims to help regenerate cardiac muscle and will be 'trained' for rhythmic contractions. David Vorp PhD, Associate Professor in the university's surgery and bioengineering departments, is developing the tissue-engineered blood vessels, which are undergoing mechanical stresses to train them to function like natural vessels.

At a molecular level, biological markers of stem cells will be measured to establish differentiation into appropriate cell lines, including cardiomyocytes, smooth muscle and endothelial cells. Fluorescent proteins, tagged to cell components, will enable study (via imaging) of cell and tissue development within a patient.

This research could also have an impact on other tissue disorders, such as those affecting the bladder and urethra.

Unfair drug promotions

Warning - plus 2nd biggest pharma settlement ever

USA - A federal inquiry into illegal sales and marketing of Zoladex, a prostate cancer treatment, led to AstraZeneca agreeing to pay $354.9 million and entering a five-year corporate integrity agreement (CIA) in settlement. This was reported as the second biggest settlement in pharmaceutical history.

The firm pleaded guilty, in a federal district court, to violating the Prescription Drug Marketing Act's provisions forbidding the sale of drug samples and related promotional practices. The Justice Department listed in its findings that AstraZeneca employees had

- given doctors thousands of free Zoladex samples, knowing they would prescribe them and bill Medicare and Medicaid for their use.
- offered free samples, unrestricted educational grants, business assistance, travel, entertainment, consulting services and honoraria to doctors in exchange for their prescriptions of the drug
- offered doctors big discounts on Zoladex, but not reflected those discounts in the average wholesale price reported to Medicare and Medicaid, thus inflating prices and increasing physicians' reimbursements.
- misreported and underpaid Medicaid rebates for Zoladex to the States under the Medicaid Rebate Programme.

Botox - Allergan, the California-based pharmaceutical firm that produces Botox, received a stern warning for underplaying risk in this treatment. In a letter from the US Food and Drug Administration (FDA) the firm was ordered to change wording in advertisements, because they '... falsely identify your product as a cosmetic treatment, fail to reveal material facts about the product's use and minimise the risk information.' One of the main complaints from the FDA was that the advertisements made claims beyond the approved use of this treatment.

In clinical trials 44% of Botox recipients showed side effects. These included nausea, temporary eyelid droop or respiratory infection.

Royal longevity secret?

Aberdeen, Scotland - A small study by GPs found spring water, drawn near the Queen's Balmoral estate, decreased rheumatoid arthritis pain in 2 in 3 patients. It has low mineral content, near-neutral pH and anti-oxidant properties.

NHS BUYS PRIVATE HEART HOSPITAL

The London Heart Hospital has been bought by the UK's National Health Service for £27.5 million. The Heart Hospital is on the site of the former NHS National Heart Hospital, which closed in 1991 when services were moved to a new wing at the Brompton Hospital. It comes fully equipped and staffed by its private owners Gleneagles Hospital UK. The Heart Hospital has 162 staff (and 95 beds). No redundancies will be offered. The Heart Hospital's present staff will be offered a transfer to the NHS.

Health Minister Hazel Blears announced that the hospital, presently having four operating theatres and three catheter laboratories, will become a new cardiac centre for the NHS, run by University College London Hospitals Trust (UCLH). All UCLH heart services now at their Middlesex Hospital site will be transferred to the Heart Hospital - doubling cardiac capacity.

When NHS heart surgery switches to the Heart Hospital, UCLH will open a new Diagnostic and Treatment Centre (DTC) at the Middlesex, which will enable the NHS to carry out an additional 2,000 surgical procedures annually, mainly in orthopaedic, general surgery and urology.

'This unprecedented deal means that the Heart Hospital will become a world-class NHS hospital and its staff will become NHS employees. The facility and transferred staff will significantly increase capacity, more than doubling the number of cardiac procedures carried out every year by UCLH. The number of specialist cardiac staff working in the NHS in London will increase by 82,' Hazel Blears pointed out.

NHS charge card introduced

Buying power for ward sisters

UK - NHS wards have an 'environment' budget of £5,000 minimum to be spent on what the staff considers would improve patient care and staff conditions. Now they can actually spend that sum by using special visa backed charge cards. The budget can be spent on whatever ward sisters or charge nurses consider will best enhance and humanise patient care, or the working lives of staff. This includes improvements and repairs to the ward itself, medical and non-medical equipment, and consumables. The one restriction is the budgets cannot be spent on staff pay costs or other staff-related costs such as training.

The ward sister or charge nurse will have responsibility for spending the ward environment budget using the Purchasing Card. This will require good nurse leadership and involving the ward team in decisions about how to improve the ward environment - to focus on the 'human' aspects of care. Nurses participating in the pilot programme

So far, items bought have included furniture, bookcases, uniforms for ward clerks, educational activities for children, child safety gates, mirrors, and even gardening tools (for patients in a learning disability unit). All these purchases were quickly completed, without the impedance of the usual red-tape and form filling involved in other hospital expenditures, increasing enthusiasm for the system.

The NHS Purchasing Card is acceptable at any VISA outlet. Additional features, specific to the Purchasing Card, include transaction limits, merchant category blocking, management information and statements, VAT reporting, corporate liability waiver and co-branding. The NHS, which is currently developing a co-branded card, emphasises that these are not credit cards, and payment is settled in a lump sum.

All ward sisters or charge nurses who manage a ward must be given the opportunity to control the ward environment budget and are thus eligible to use a purchasing card.

The NHS points out that, given the broad objective of ward environment budgets, Trusts and PCTs should not withhold a budget on the basis of a ward's age or condition. Therefore, wards due for imminent closure, new wards and wards in a PFI hospital are all entitled to a budget. Where there is doubt, hospital managers will decide how a ward is defined within their hospital with a view to delivering the spirit of this initiative, and Regional Office approval must be obtained for any exceptions, the NHS adds.

Hazel Blears, the government's Health Minister, said: 'With more power going to the frontline, patients are starting to enjoy cleaner, better-equipped wards and improved standards of care. Nurses know what their wards need, they know what will help improve the care and recovery of patients. By giving them the financial control they need we can ensure that patients get a better service in the NHS.'

Sarah Mullally, Chief nursing officer added that the new purchasing cards '... demonstrate the Government's commitment to empowering nurses and improving the fundamental care of patients as we set out in The NHS Plan.'

Responsibilities - There is a simple and complete audit trail - kept by Finance departments - and cardholders must keep accurate records as part of that audit trail. The cardholder must ensure quality of purchases, and keep up communications to maintain controls. Management spot checks will take place for financial control and to prevent fraud. A log of all transactions must be kept, and goods must be checked on arrival for acceptability.

Progress is also being made in the NHS to introduce ward housekeepers, who will work with ward sisters to ensure wards are clean and that food is enjoyable.

Hospital reconstruction

CONTRACTS OFFER NEW FINANCING CONCEPT

Complete modernisation and building management will commence at the Sana-Clinic, Remscheid, following an agreement between Siemens Building Technologies/Landis & Staefa GmbH and Gegenbauer Krankenhaus Service GmbH. The firms say this is the first time that a new structure will also be equipped with building services systems. The partners will invest some 26.4 million euros in the project - which will last some 15 years.

Service providers frequently pre-finance the modernisation of building services systems and 'refinance' the investment through energy/operating cost savings achieved. However, the partners report that their approach is new, in that they have considered the design planning of building services systems for structures that are yet to be built from the aspect of operating costs over the entire life cycle of equipment. In this way they could define economical alternatives, select a more favourable architectural design, in terms of energy use and business economics, and develop a model on that basis. This, they add, allows for higher investments that are refinanced from lower operating costs.

Sana-Klinikum Remscheid sees this financing method as a way of curbing costs. Over the next two years the clinic will convert its university hospital facility (745 beds, 41'000 patients per annum), which is currently located at two sites, into a modern, economically oriented clinical facility at a single location with the support of the two partners. To achieve this, a large number of buildings will be demolished, converted or extended, and a large part of the building services systems will be modernised, renovated, or replaced.

For the hospital's operators, the rationale behind financing building services equipment via contracting was the fact that ultimately the sum of the investment, energy and media costs, plus operational management is decisive, they point out. 'Only optimisation of all three cost types will enable long-term profitability. Although expenditure for the initial investment would have been lower with the original general contractor concept, the day-to-day running and operator costs would have been significantly higher.'

The contract with the consortium refers to defined basic requirements for room conditions and plant availability, to basic investments, operating costs and energy/media consumption. The contract term is 15 years. Legally, this contract is based on the contract procedures for building works, and follows the principles of energy-saving contracting agreements. The contract includes two major guaranty obligations:

- Compliance with a maximum investment limit based on design planning
- Compliance with annual energy and operating cost requirements with respect to design planning

The consortium will initially invest 26.4 million Euros in new installation, modernisation, renovation and in creating a framework for professional building operations. Sana will repay those costs to the consortium via contractually agreed annual contracting rates.

This model, which is being implemented for the first time with Sana-Klinikum Remscheid, constitutes a combination of contracting for systems, energy-saving i.e. performance, and technical building management.

The Sana Medical Association, founded in 1976 by 18 German private health insurance groups, comprises 21 hospitals and two geriatric care centres, and manages 40 other hospitals and 18 geriatric care centres.

The first contract between Sana and a municipal hospital was signed with the city of Stuttgart in 1991. The "Stuttgart Model" set in motion a process of modernisation of public buildings. Including the geriatric care centres (partially with in-house management), Sana has commitments in 93 facilities with some 17,400 beds. The association's 23,530 employees generated sales of 1,697 million Euros in 2002.

Source: Sana-Klinikum Remscheid

The Martin Luther University Hospital Halle-Wittenberg

A finger on the pulse of our times

Forward-looking
Ultramodern on the inside and outside - the furnishings and fittings keep what the facade promises. Made of metal, steel and lots of glass, the building's facade reflects innovative methods of treatment and state-of-the-art equipment.

The success of a modern hospital hinges on medical expertise combined with hygiene, functionality, cost-efficiency and, last but not least, patient satisfaction. In response to these necessities, the Martin Luther University Hospital, in Halle-Wittenberg, Germany, decided to expand and redesign its facilities. Today, futuristic facades of metal and steel reflect innovative treatments and state-of-the-art equipment.

Patients' rooms have an equally advanced style. The use of wood and warm colours create a pleasant, almost hotel-like atmosphere. The generous use of glass in facades, roofing, and to some extent interiors, also provides a sense of openness. 'Everything has become so much brighter and friendlier, which is extremely important for the well-being of patients and staff alike,' said Marion Conrad, head nurse at the Surgical Centre.

20 operating theatres, intensive care departments, plus day units and out-patient clinics form the ideal basis for highly specialised examinations and treatments, and individual wards have been customised for specific needs.

Grohe, the water technology specialist, supplied the faucets used by patients and medical teams. These include wall-mounted Grohtherm Ergomix thermostat mixers in the Blood Transfusion Department. Their ergonomically shaped scale handles for temperature adjustment are mounted on the front, for easy operation. The longer operating levers (170 mm) can easily be used with the elbow, thus ensuring better hygiene. An integrated thermostat also guarantees constant temperature to avoid scalding due to pressure fluctuations or cold water failure.

Barrier-free bathrooms - The Euroeco safety mixer in patients' rooms, also provides washbasin taps with a 170mm, ergonomically shaped lever. These are not only safe, but an economic choice: if the lever is turned to the extreme left, the faucets are closed; if turned to the right, cold water flows in a pre-set quantity. The further the lever is turned right, the warmer the water becomes. A maximum temperature can be pre-set using the mechanical hot-water stop. Additionally, the maximum water quantity is pre-set for nine litres per minute but can be reduced as required.

'We had used Grohe products since 1990 and were so satisfied that naturally we chose this renowned sanitary faucets specialist again. Their fittings are characterised by durability and convenient operation,' said Steffen Otto, a member of the Construction Co-ordination Committee, also responsible for modernisation of the hospital.

Photos: Grohe

Barrier-free bathrooms
Hospital patients often have to deal with temporary impairment of their mobility. To make everyday hospital life easier for them, the hospital features barrier-free sanitary facilities. The longer, ergonomically shaped levers such as those of the "Euroeco Special" safety mixer are particularly easy to use.

Pure relaxation
The benefits of hydrotherapy have long been known. At the Halle hospital, the "Relaxa Plus" shower not only contributes to convalescence but also offers maximum showering pleasure. Patients can choose between two different spray patterns.

WANTED: radiology manager

For state-of-the-art imaging

Halesowen, UK - The private West Midlands Hospital, staffed with state registered radiographers (including two fully-certified breast screening radiographers, reports the opening of a new £1 million Radiology department. Barbara Rundle*, the Radiology Manager responsible for the project, said the hospital now offers a large main x-ray room, for general work and digital imaging, which contains state-of-the-art Siemens equipment, dry laser facilities, and a mammography room for breast screening, all serviced by an 'AGFA daylight processing system'.

Using ATL Ultrasound, the department continues to carry out various diagnostic procedures for kidney and gallstones, deep vein thrombosis (DVT) checks - on patients with varicose veins - and testicular and pelvic screening.

Open daily, the private hospital takes private patients and those referred by their general practitioners.

***RECRUITMENT**: Barbara Rundle, having successfully completed the refurbishment task, is now semi-retired. The hospital is currently seeking a replacement for the role of Radiology Manager. Contact: Gloria Kerrigan or Tony Yates.*
Phone: +44 (0) 1384 560123).

MARCEL KAUP REPORTS ON THE INTEGRATION OF A NEW SYSTEM AT ULM UNIVERSITY CLINIC

E-PROCUREMENT

Marcel Kaup, Senior Sales Consultant at Wallmedien AG, is an expert in the integration of software modules for controllers and finance departments

The advantages of electronic procurement are obvious: increased productivity, less likelihood of errors, and data can be integrated into an existing 'enterprise resource planning' (ERP) system without changing to a different central system. In the medical sector this concept has proved efficient due to a fast connection, the now extensive range of offers and easy 24/7 accessibility.

Ulm's university clinical centre (www.uni-ulm.de/klinik) wanted more than 'click-to-buy' ordering for its in-house e-procurement system. The clinic was addressing future needs, such as far reaching integration of equipment, labour organisation, and meeting the new DRG law in 2004.

Years of experience have shown that successful electronic purchasing is dependent on the far-

reaching integration of an e-procurement system into an existing system. Ordering data can be fed directly from the ERP-system and completed orders directly forwarded to finance and materials management, which enables competent data evaluation - guiding future purchasing decisions.

In-house, an e-procurement system flows, like bar code scanner systems in shops, and can be a used as a three-shift system. This scenario can therefore be eliminated: a member of staff on a morning shift notes that an item is out of stock and orders it. During the next shift another staff member also sees the item is out of stock and orders it! However, when using an e-procurement system a warning is issued to the user, showing the ordering time, amount ordered, and expected arrival date of the item.

The DRG law - Anyone considering an e-procurement system should ensure that it supports group-related account assignment. Many systems can relate prostheses, implants, etc. to certain cost centres, but not to the various patients. An early changeover in purchasing can make the applied realisation of the case-based lump sum system far easier.

Pricing - A further advantage of e-procurement is that prices negotiated by the client (hospital) yesterday can be valid for all orders the next day. In addition, the user is free to choose specific and essential component suppliers and producers.

When choosing the in-house system, Hans Hoot, head of material management at Ulm

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Hospital buyers must juggle shrinking budgets to offset rising costs, understand and follow strict national guidelines, issue tenders across the EU, as well as keep abreast of new products, new technologies, new supplier structures and company mergers. How do they perceive their changing roles? Our Austrian Correspondent *Christian Pruszinsky* reports.

Metamorphosis: the new hospital buyer

The need for economic rationalisation in European healthcare systems has resulted in re-organisation of purchasing processes and logistics. Continual developments in international markets, international company mergers and new ordering and distribution methods (e.g. the internet) have also brought new challenges for hospital purchasing departments. Today, buyers can no longer play suppliers against one another. Legal guidelines and other requirements - such as those obliging buyers to request Pan-European tenders for orders over €200,000 - have also limited their freedom.

Buyers at the Vienna Hospital Association (KAV) are responsible for a medical infrastructure involving some 400,000 patients with five million hospital in-patient days (including care and old people's homes). This association has created a new, flexible structure for purchasing. Called the 'Purchasing Forum', this is based on voluntary co-operation between several hospitals and covers everything from food and laundry to transportation and technology - including IT.

European tenders are agreed by representatives from the associated hospitals, all of which also carry out product testing and usage analysis. Drug purchasing - with costs exceeding €310 million - is carried out via a committee, chaired by heads of the large hospital pharmacies within the association, who annually negotiate terms and conditions with pharmaceutical companies.

Additionally, each individual hospital in the KAV has a specific budget for single tenders, plus medical equipment and other specific supplies. For this, the Purchasing Forum offers administrative help in the form of a central catalogue of master data, based on SAP, as well as interfaces to provide a fully electronic purchasing system - including invoicing and payments.

Norbert Wasl MA, Head of the Purchasing Forum, and engineer Josef Kastl, Head of the higher Service Department point out that this structure is based on the European trend for public service organisations to maintain a high level of entrepreneurial freedom. Over half of Austria's hospitals are in the public sector.

EU tenders

Despite varying rates of value added tax (VAT) in different European countries - ranging from 0-25% in Scandinavian countries (fig. 1) - despite different manufacturers' prices for drugs, adjusted in terms of purchasing power (fig. 2), and despite new suppliers who have mastered competition rules perfectly, the effects of European tenders for large purchases are limited, although the trend in purchasing is definitely towards large orders and tenders. Buyer Josef Kastl of the Vienna Hospital Association and business school graduate Gerhard Jirovsky, Head of Sempermed (one of the world's largest makers of medical gloves), say that due to language barriers and logistical problems (e.g. transportation of goods from Portugal to Norway or from Sweden to Greece can involve the difficulty of crossing national borders), suppliers often only respond to tenders put out in neighbouring European countries rather than those further afield. Pan-European re-imports or shopping trips are not something that Gerhard Jirovsky has seen in his market sector. He also views attempts to process large orders through more or less anonymous internet platforms (with no transparency and no guarantee of adherence to product norms) as dangerous and is calling for more regulation of those purchases).

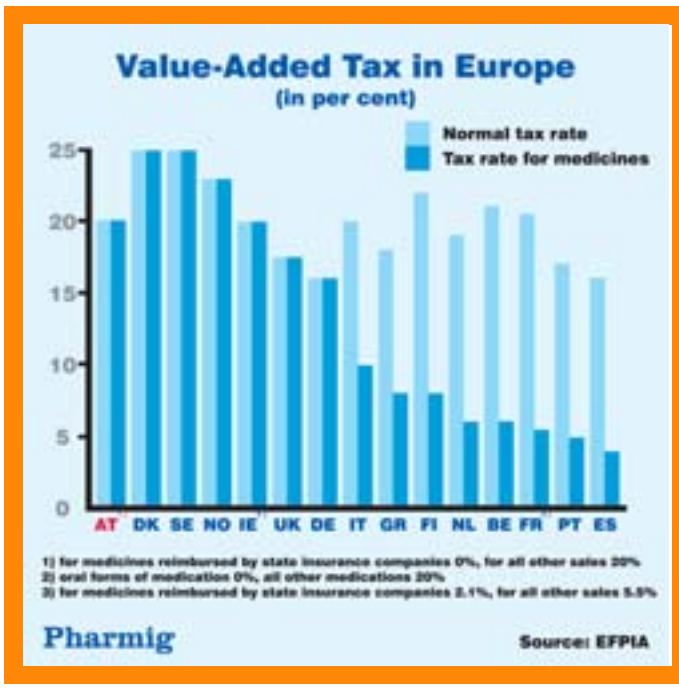
The conditions under which tenders are awarded have become increasingly tough, he points out, adding that they are sometimes almost unacceptable. One example is business volume. In extreme cases, the rules here can lead to a situation in which a manufacturer must factor a potential order for 10 million units into its system when the customer buys only one to fulfil contractual obligations.

Price guarantee is another problem - tenders often stipulate that prices quoted must be guaranteed for about two to four years or more, which ignores market shifts and forces. Whilst manufacturers are bound by contractual fixed prices when market prices are rising customers can simply raise new tenders if market prices are falling, thus reducing their costs. In reality, says Gerhard Jirovsky, these tough rules are made more acceptable by the common sense and fairness of many buyers, who may offer clauses in their terms and conditions to end contracts early, or who simply may be keen on good business relationships that should outlast market fluctuations.

Suppliers and sales reps - the future: The increase in gigantic company mergers across all business sectors, and the increasing purchasing powers created by customers pooling resources, create a big challenge for specialist medical suppliers. The development of group purchasing organisations seen in the USA, which reduces distribution to a mere logistical function, is not yet detectable in Europe, where other structural conditions exist. However, Gerhard Jirovsky says the annual distribution of 6.5 billion Sempermed gloves is almost exclusively managed through wholesale operations and the firm's business partners, which means that regional and local specialist suppliers miss out.

Wolfgang Gross MA, Managing Director of the Association of Austrian Medical Device Manufacturers (AUSTROMED) does not think there is much danger. The classic functions of specialist suppliers (e.g. offering a large and varied product range, information, advice/training, logistic chains directly to hospital wards, 24-hour servicing, after-sales service etc.) will always be needed by hospitals, because the patient is the main focus, not the red pen. The users - doctors, nurses, technical staff - will always want the highest level of flexibility and specialist advice and training, he points out. So the future prospects for regional, specialist suppliers remain intact. The archetypal, jovial sales representative, with order book ever open, is increasingly being replaced by trained advisers, who can provide training, service and after-sales care.

All those involved in purchasing - bearing in mind that they handle around 40% of the entire hospital expenditure (fig. 3) - are interested in business relationships built on partnership. Dialogue, perceptiveness, and the understanding of different points of view are the basis for continuous, good co-operation.



continued from page 5

the backend-system. To obtain non-listed material, staff can send an order request. 'Time saved by using this system will not come to grief by having to surf in the internet,' Hans Hoot points out. The Wallmedien catalogue solution catbuy (www.wallmedien.com) provides over 10,000 items - and the number is increasing. Most notable suppliers in the laboratory, dentistry and office supply sectors are integrated. We also try to integrate as many other suppliers as possible, to expand the range of savings and provide possible co-operation with other clinical centres.

Every ordering process via e-procurement systems means an effective cost saving compared with traditional processes, and operation costs for ordering a single item can be reduced by up to 30%. If many product groups are provided by the system, employees can order almost all their needs via a mouse click. Therefore, the same process, which in the market place would include the payment of fees, is a further step to amortisation in e-procurement. The only difference lies in initiation costs. These are quite high with the in-house concept but, with good utilisation, can be amortised within 1-2 years. On the other hand, with a market place concept, the running cost will remain constant.

Co-operation brings further savings

The 2002 survey 'European Physicians and the Internet', by Boston Consulting Group (www.bcg.com), confirmed that over 50% of physicians are interested in cost savings and administration optimisation via IT-systems. The


Hans Hoot

majority said they would invest in e-procurement if savings were to be higher than 10% compared with traditional ordering processes. 'That percentage is more than realistic,' says Hans Hoot. 'Due to the reduction of both cycle time and the number of wrong orders we expect enormous savings.' Of course, if a traditional ordering process has already been fully optimised, then e-procurement savings will be low, For comparison: the German automobile supplier Continental Teves AG had used a Purchase Card system before integrating a new e-procurement system, so savings in operating costs were minimal. Nevertheless, further savings were achieved, which had a direct effect on sales.

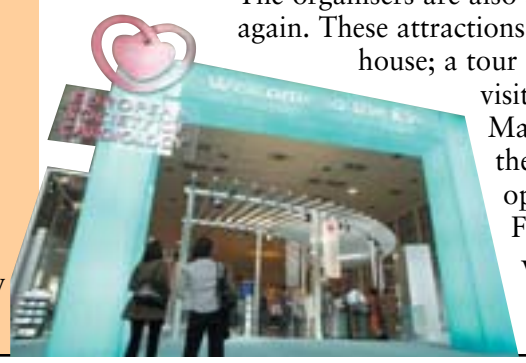
The SAP and Wallmedien combination at the Ulm clinical centre also presents the possibility of private exchanges. Luzius Ruppert, Swiss consultant for procurement management (www.ruppertpartner.com), points out that purchasing co-operation between enterprises and institutions leads to savings of up to 15%. If you combine this saving potential with electronic procurement, the 10% wanted by physicians is easy to attain. 'The university clinical centre has already concluded a Cupertino contract with the SANA Kliniken GmbH, Hans Hoot says. 'The Cupertino will include all product groups.'

ESC Congress 2003

VIENNA Austria 30 August - 3 September 2003

Along with its usual excellent scientific programme, exciting new advances in cardiac imaging technology will be on show. We focus on a few of these, with details of their developments from leading manufacturers and scientists who take them into clinical practice.

A multitude of papers were submitted to the scientific committee for this year's congress. Naturally, within the allotted time span in Vienna, only the most exceptional can be aired this time around. That stringency is probably what makes this event Europe's most stimulating.



The organisers are also adept at arranging lighter moments for participants expected again. These attractions include a walking tour of Vienna; a stop at a Viennese coffee house; a tour of Burgenland and one to the Danube valley, which includes a visit to a Baroque abbey thought one of the best in Austria; a Magic Flute performance at a famous Marionette Theatre; visit to the Spanish Riding School and much else, and, of course the optional ESC's own black tie Gala Evening, at the exclusive Festsaal of the Viennese City Hall.

We look forward to receiving your reports on this remarkable scientific event.

TruST 12-lead for Infinity Telemetry

Vienna, August - Dräger Medical, a Dräger/Siemens company, will introduce TruST 12-lead ECG monitoring for its Infinity Telemetry System at the ESC.

Infinity Telemetry with TruST (part of the Infinity Patient Monitoring System) further substantiates Dräger Medical's new approach to monitor design, patient transport, bedside ergonomics and workflow, as well as data management,' the firm reports, adding that the system is now available in Europe, Asia Pacific, Latin America, and the US.

Unlike conventional 12-lead ECG monitoring, which needs 10 electrodes, this new system uses only 6 electrodes to process 12 leads, and has a standard electrode configuration to ensure accurate and efficient placement. 'What differentiates TruST from other reduced electrode set 12-lead algorithms is its ability to measure 8 "true" leads and interpolate only 4. By including 8 true leads in a reduced electrode set 12-lead, TruST protects against lead-off conditions, increases accuracy in arrhythmia processing, and decreases chances of artifact permeating all leads. As a result, TruST provides increased reliability in continuous 12-lead monitoring and ST segment analysis,' Dräger points out.

'To maximise equipment investments, Infinity Telemetry with TruST supports varying patient acuity levels by using a single monitor for 1-, 7-, 8- and TruST 12-lead ECG monitoring and offering an adjunct motion tolerant, continuous SpO_2 monitor. And, the firm adds, the system offers one of the lightest transmitters available, thus enhancing patients' comfort and mobility.

TDI-Quantification Package: ready for implementation in clinical studies

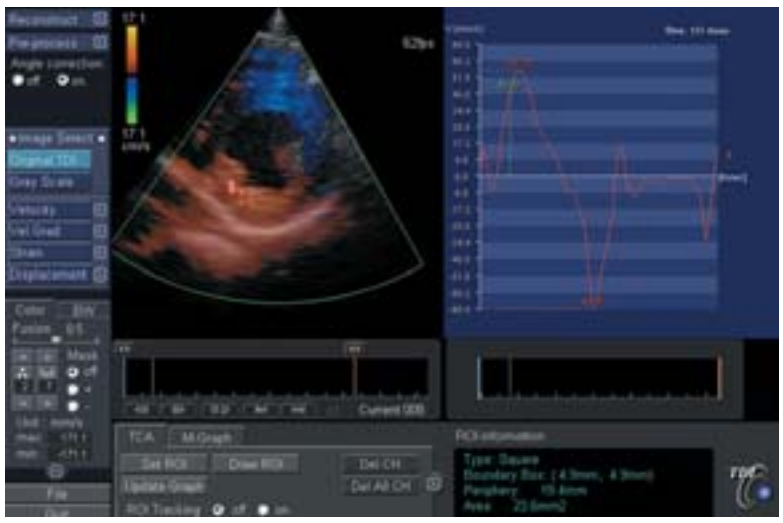


Figure 1

Figure 2

Courtesy: Dr Nesser, Elisabethinen Hospital Linz, Austria

In 1994, Toshiba Medical Systems was the first imaging company that introduced Tissue Doppler imaging method on a commercially available digital platform called PowerVision. Other vendors followed introducing TDI applications on their systems and Tissue Doppler.

Recently the firm introduced a new digital platform ultrasound system called Aplio. This highly sophisticated hardware has an open structure and allows high quality and high Frame-Rate data acquisition the firm reports. This has great impact on the handling and analysis of ultrasound data in Routine, Contrast, Stress Echo and other applications especially TDI.

Figure 3

To make the analysis of TDI data routinely applicable, Toshiba introduces the TDI-Q commercially available package on the Aplio platform.

TDI-Q provides sophisticated analysis tools integrated in the Aplio system and based on high quality signals in Raw Data format.

The high Frame Rate acquisition will allow essential time related analysis measurements, important for patients with a-synchronic contraction or Bi-Ventricular Pacing.

Live 3D Echo

Real-time benefits for cardiologists

Echocardiography has made significant contributions to the non-invasive evaluation of cardiac disease for many years. Every so often technical innovations arrive to add to its clinical value and standard of care procedures. Live 3D imaging is potentially one of these, for this displays a 3D cardiac image in real time, completely integrated into a fully functional ultrasound system.

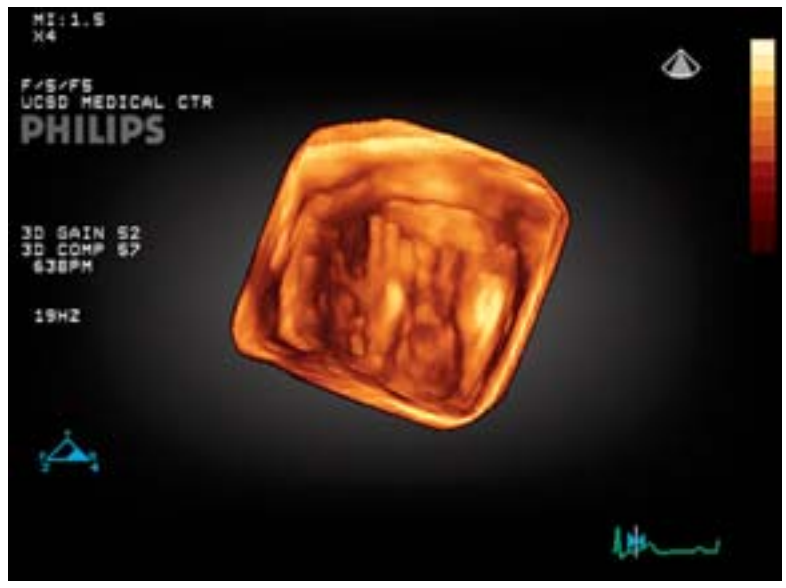


Figure 1

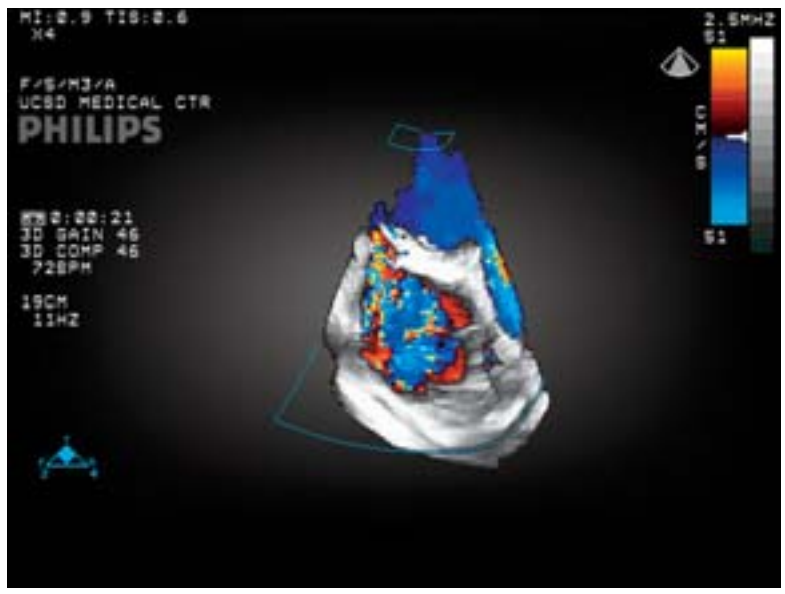


Figure 2

History - A number of limitations were associated with Triggered 3D imaging, including real-time interaction of the image. All imaging modes with the biggest impact in echo have one thing in common - real-time imaging. Every mode interacting with the image in real time allowed immediate decision making. Triggered 3D imaging required an acquisition protocol that took many beats and sometimes minutes. The acquired data set was transferred to an off-line software workstation that reconstructed and rendered the image, which added time to view the 3D image loop. The loop was reconstructed from many beats, adding two other limiting factors: spatial discordance due to movement of the heart, transducer, or patient during the acquisition process, and temporal discordance due to multiple beats of the rendered image.

Three new technologies have been developed to overcome the hurdles in 3D imaging.

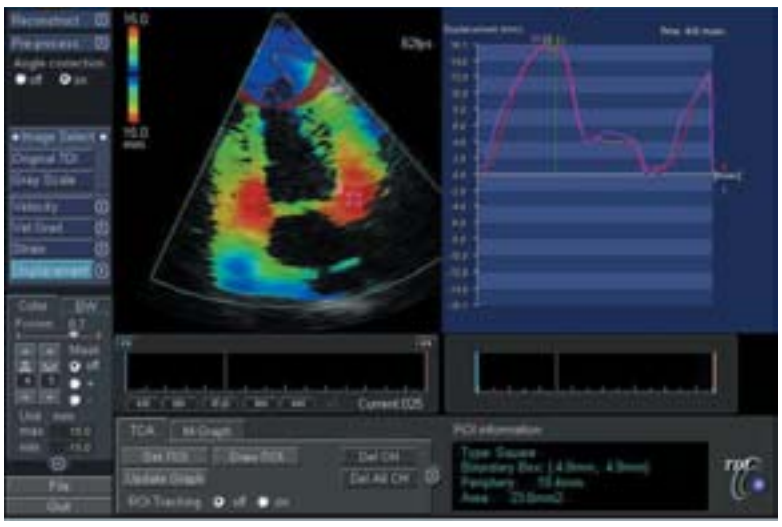


Figure 4

Fig. 1: Shows a TDI Image of a short axis LV with Standard Velocity Display. The Tissue Doppler Velocities have a transparent overlay for optimal visual qualitative assessment and positioning of the sample ROI.

The package provides the analysis of Velocity, Strain, Velocity Gradient (Strain Rate) and Displacement, all combined with Angle Correction! A unique tool in the field! Angle Correction recalculate the original velocities towards a user definable reference point, and makes the interpretation of the data more easy in clinical practice in patients with ischeamic heart diseases and cardiomyopathy.

Fig. 2: A screen display of a normal LV with a good function of the Myocardium. As a result of Angle Correction, red to yellow colours indicate the deformation/Strain, in the short axis View.

Fig. 3: An image from a patient with an inferior infarction and dyskinetic IVS. The dark red colours indicate a very low deformation/contraction of the inferior wall. The extracted curves show delayed contraction of the ischeamic areas and post-systolic thickening in the IVS.

Based on real tissue tracking methods, advanced analysis tools can be used to display and quantify myocardial function.

An easy to use ROI tracking system will not only speed up the analysis, but will also improve results accuracy!

An exporting tool allows the data to be converted in ASCI files that can be read by commercially available spreadsheet and statistical calculation programmes.

Fig. 4: Demonstrates the displacement of the myocardium during contraction.

Time Displacement Curves allow specific assessment of local structures, in this case the basal region of the posterior wall, and IVS, simultaneously during the cardiac cycle.

The TDI-Q Package allows the implementation of TDI analysis not only for Research purposes but also for clinical use.

Transducer Technology - The transducer is the true enabler of Live 3D imaging. The Live 3D transducer is a matrix array transducer with close to 3,000 elements, each electrically connected to form the 3D sound beam as well as to receive returning echoes from a three-dimensional space.

This configuration of the transducer enables the user to control beam formation and steering in the axial, lateral and elevation planes for precise 360-degree control of the beam profile.

The matrix transducer also generates two simultaneous 2D imaging planes through multi-dimensional focusing and multi-directional beam steering.

System Technology - The matrix array transducer requires significantly higher sampling rates than typical 2D imaging. To handle the vast amounts of data coming back from the matrix array transducer the ultrasound system must be able to process that data instantly to generate a real time 3D image. The system uses a supercomputer and exclusive signal processing for the required volume rendering, which instantaneously creates real-time 3D on the system monitor.

User Interface - Once the volume rendered image is on the ultrasound system screen it is ready to be reviewed with various editing controls. A flexible interface allows instantaneous cropping and rotating of real-time volumes so the clinician can quickly investigate the image and make a diagnosis.

These technologies enable the acquisition, rendering, and review of real time 3D images, presenting a variety of imaging modes that can enhance the visualisation of cardiac anatomy and haemodynamics.

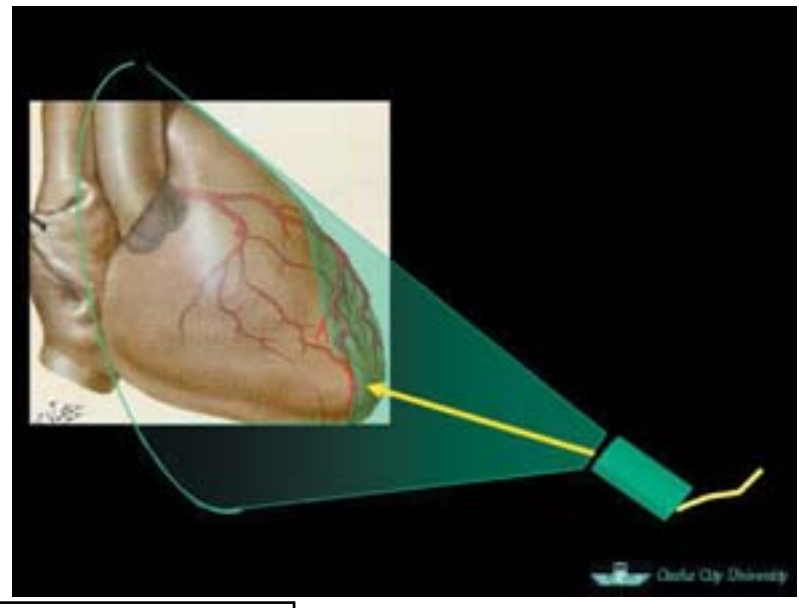
By overcoming triggered 3D limitations, Live 3D imaging enables clinicians to see the heart in a completely new way, adding value to echocardiography.

Source: Philips Medical Systems

Echocardiography & coronary artery disease

A guide to the new approach for coronary circulation, using transthoracic Doppler echocardiography (TTDE) by Dr Hiroyuki Watanabe and Dr Takeshi Hozumi, Assistant Professors, and Dr Junichi Yoshikawa Professor and Chairman of the Department of Internal Medicine and Cardiology, Osaka City University Medical School, Osaka, Japan.

CAD



Coronary flow velocity reserve (CFVR) has been accepted as one of the most reliable indices in detecting functional coronary stenosis. It is also accepted as an index for evaluating coronary circulation in patients without coronary narrowing. This index has been measured - invasively - by a Doppler guide wire or Doppler catheter or - expensively - by positron emission tomography. And although these techniques successfully introduced the value of the index in CAD or coronary risk in vivo assessment, in patients with known CAD their use is limited.

Recently, technological advances in echocardiography have enabled us

Siemens: 'Continuous efforts to identify coronary narrowing and to evaluate coronary circulation in patients without coronary narrowing are a critical mission for us'

to evaluate coronary flow dynamics noninvasively, using transthoracic Doppler echocardiography. The success rate of CFVR measurement is > 90%, which is feasible for daily clinical use. Thus coronary flow can be checked not only in a cath lab, but also in the echo lab - or even at a patient's bedside.

Measuring CFVR using TTDE involves three steps and CFVR is calculated as a ratio of hyperaemic to basal coronary flow velocity.

1: Visualisation of coronary flow by colour flow mapping

Echocardiographic images can be obtained from the acoustic window around the apex - usually on midclavicular line in the fourth and fifth intercostal spaces in the left lateral decubitus position. After the lower portion of the interventricular sulcus is located in the long-axis cross-section, the transducer should be rotated clockwise to search flow signals on the left anterior descending artery (LAD) under the guidance of colour flow mapping. The characteristic of coronary blood flow signals is linear signals that persist during entire diastole (Fig. 1).

2: Coronary flow velocity recordings

Coronary blood flow velocity can be recorded by pulsed-wave Doppler (3.5 MHz) using a sample volume (1.5 to 2.0 mm) placed on the colour signal in the mid to distal LAD. Adenosine is administered by intravenous infusion (0.14 mg/kg per minute) for 2 minutes to record spectral Doppler signals during hyperaemia. Electrocardiogram, heart rates and blood pressure should be monitored continuously

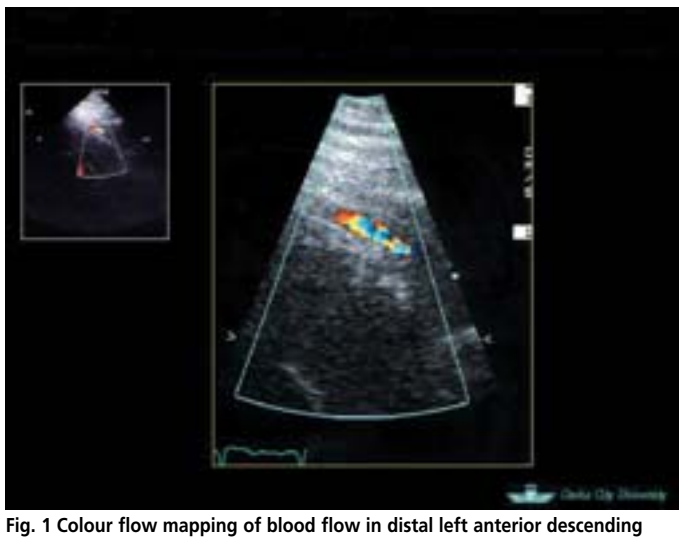


Fig. 1 Colour flow mapping of blood flow in distal left anterior descending coronary artery

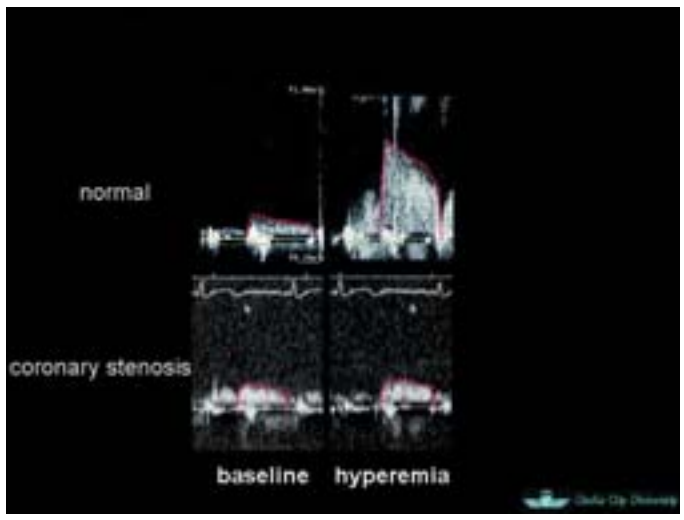


Fig. 2 Flow velocity recordings in (A) coronary artery in normal subject and (B) in patient with coronary stenosis, whose flow velocity decreased during hyperaemia (right side). Thus, coronary flow velocity reserve in this patient is decreased.

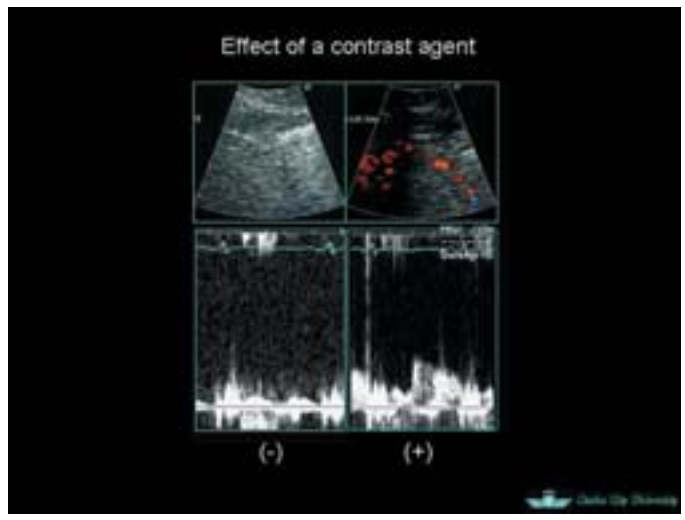


Fig. 3 Effect of a contrast agent on colour flow mapping (top) and flow velocity recordings (bottom). Using a contrast agent, coronary flow was clearly visualised

during examination in all patients. During the recording, the examiner should try to hold the transducer on the same position as much as possible.

Step 3: Measurement of coronary flow velocity and CFVR

Coronary blood flow velocity can be measured off-line by contouring the spectral Doppler signals using the integrated evaluation programme in the ultrasound system (Figure 2). Both peak and mean diastolic flow velocities at baseline and peak hyperaemia should be measured as parameters necessary for CFVR assessment. CFVR is calculated as the ratio of hyperaemic to basal peak (peak CFR) and mean (mean CFR) flow velocity. Usually, diastolic flow velocity is alternatively used. Normal CFR is defined as >2.0 on the basis of the results of previous studies, which had evaluated flow velocities in the distal LAD.

Tips for Coronary Visualisation

First, recognition of the anatomy is needed. A cross-section of coronary imaging cannot be obtained in standard two-dimensional images. Because the LAD exists in anterior interventricular sulcus, the landmarks for coronary imaging are the left ventricular wall, right ventricular wall, and interventricular septum.

Next, specific machine settings for coronary flow are critical. The most important setting is modification of velocity range in colour flow mapping. When using velocity range for routine colour flow mapping (approx. 60 cm/s), it is difficult to visualise coronary flow, which is diminished by wall filtering in most cases. Thus, velocity range should be set around 20 cm/s to visualise coronary flow.

A final important point is the use of the appropriate transducer for coronary flow visualisation. We recommend using a high-frequency (5 MHz) transducer because the distal LAD is in the near field for most patients. However, selection of the transducer must be made in specific cases. When the distal LAD exists in the far field, a lower frequency transducer may be better.

When flow visualisation or velocity recordings are not sufficient for analysis, a contrast agent is useful as a Doppler enhancer. Although the number of the patients who need a contrast agent differs between study populations, the proper use of a contrast agent increases the success rate of flow velocity recordings (Figure 3).

Conclusion - Coronary flow assessment by TTDE, which is completely non-invasive, opens a new window for physiological assessment of coronary circulation.

First appeared in: „Applications in Cardiac Imaging“, Nov. 2002, Anderson Publishing, Ltd.

Japanese ultrasound meets EU rules

Worldwide research sites advance cardiac imaging

Producing diagnostic ultrasound equipment for general imaging, abdominal and vascular applications and solutions specifically for cardiac and cardiovascular diagnosis in neonates, children and adults, equipment from the Japanese firm Aloka is used throughout healthcare facilities - from practitioners' offices to university and research institutes - worldwide. In Europe, to meet requirements that can differ from other regions and to more directly serve customers' needs, the firm established the Aloka-Europe group, plus an R&D group.

Among the company's cardiology and cardiovascular products are the Aloka ProSound premium digital ultrasound systems, SSD-4000, SSD-5000 and SSD-5500, with an extensive range of sector and TEE probes for cardiology, as well as convex and linear transducers for cardiovascular applications. Each of these systems includes the currently fundamental echocardiography tool sets to acquire and measure 2D, M-mode, spectral and colour flow Doppler registrations.

'A perfect, distortion-free image quality with superb spatial, contrast and temporal resolution is guaranteed by using latest generation proprietary technologies for manufacturing the transducers and systems,' the firm points out. 'Aloka developments, such as hemispheric sound technology (HST) and extended pure harmonic detection (ePHD) for both digital beam-forming and 12-bit signal processing contributes to crisp images in tissue harmonic echo as well as contrast harmonic echo. In addition, the unique, real-time, free angular M-mode (R-FAM) option means the optimal transducer position can be used to obtain the best possible 2D image and independently choose the best angle for M-mode acquisition of up to 3 cursor lines simultaneously. FAM works both in real-time and from stored B-mode images, saving substantial examination time. Tissue Doppler and stress-echo packages can be added to support specific cardiac examinations.

'Optional advanced quantitative analysis tools include cardiac quantification (CQ), giving real-time graphical display of global contractility indicators (EF, LV-volume, etc.). Kinetic imaging (KI) and automated segmental motion analysis (A-SMA) provide more precise quantification and location data on dysfunctional areas, and allow comparison of these segments with one another.

'All acquired images and data can be shared and communicated through the available networks using one of the fully DICOM-compatible data management subsystems (DMS).

Working with several leading clinical sites worldwide, ALOKA adds that the firm is continuously investigating new or improved ways to assess cardiac function and discover early predictors for a better treatment of cardiac disease.

MAGNETIC GUIDANCE FOR

A computer and image-guided navigation system that presents '... finer and more predictable incremental movements than are possible in manual cardiac catheterisation', has been developed by Siemens Medical Solutions (Med), and Stereotaxis Inc. (USA). Both firms collaborated on the integration/operation of two systems, which include the Stereotaxis Niobe Magnetic System, to produce the Axiom Artis dFC magnetic navigation (MN) cardiac angiography system.

Using remote control, physicians can work from a control room, thus reducing daily radiation exposure in the cath lab. Catheter navigation is undertaken using 3-D fluoroscopy and magnetic navigation - the flat-panel detector is not sensitive to the magnetic fields. Using previously acquired angiographic images, the cardiologist guides the catheter through the patient's heart, transmitting navigation impulses to two magnets positioned either side of the patient table to move the magnetic-tipped catheter, which can be rotated 360 degrees.

The first system to be installed in Europe is now operating at the St

CARDIAC CATHETERISATION

Georg General Hospital, Hamburg, where the chief cardiologist, Professor Karl-Heinz Kuck said, 'Until now, there were three cardiac pathologies that were either very difficult to treat or untreatable. One is chronic blockage of the cardiac vasculature, which have always fallen within the domain of cardiac surgery. Eventually, we hope to open chronic occlusions using this new system. Another disease we hope to address is complex arrhythmias, such as fibrillation in the left atrium. The third is serious cardiac insufficiencies, using pacemakers to stimulate both chambers of the heart. Navigating the probe electrodes through veins, into the best position, has always been a problem.'

Thus the Niobe Magnetic Navigation System / Axiom Artis dFC MN may offer many patients, whose only recourse had been open-heart surgery or no treatment at all, a completely new option, the companies point out.

Magnetic navigation also has potential use in interventional neuroradiology. 'In the long run, say over the next three to five years, this technology has the potential to completely replace conventional catheter technology,' Prof. Kuck concluded.

New disease predictor

High levels of an enzyme called lipoprotein-associated phospholipase A2 (Lp-PLA2) have been shown to increase the risk of cardiac problems. Now a new, FDA-approved blood test, called PLAC, may offer an early warning sign of cardiovascular disease, even if cholesterol levels are normal, by measuring Lp-PLA2 levels during a patient's risk assessment. 'Importantly, in some cases, this test identifies patients who do not have other apparent risk factors,' said Richard E Reitz MD, Medical Director at Quest Diagnostics Nichols Institute, the firm's testing laboratory and R&D centre. 'This exciting new marker for cardiovascular risk assessment has the potential to become an integral part of our cardiovascular test offering, providing additional risk assessment information when used with existing risk markers - including low and high-density lipoprotein cholesterol (LDL and HDL), triglycerides, homocysteine and high-sensitivity C-reactive protein.'

The potential clinical value for Lp-PLA2 was first suggested in a Scottish study that focused on individuals at high risk of a heart attack (Ref. *New England Journal of Medicine*). This suggested that Lp-PLA2 might be used in identifying risk. Then, this April in Chicago, Dr Christie Ballantyne (Director of the Centre for Cardiovascular Disease Prevention at Baylor College of Medicine and DeBakey Heart Centre, Houston) presented results from a study that also indicated that those with normal levels of LDL-cholesterol had more than twice the risk of cardiac attack if the Lp-PLA2 levels were elevated.

The need for novel risk factors is underlined by the fact that 30-50% of those with coronary heart disease show normal LDL levels. 'By adding Lp-PLA2 to its cardiac risk assessment menu, Quest Diagnostics is making this valuable new test widely available,' said Dr Ballantyne.

Drug development

The experimental drug Pexelizumab did not meet primary efficacy and mortality endpoints during a Phase III study, reports Alexion Pharmaceuticals - working on this development in partnership with Proctor and Gamble Pharmaceuticals. Whilst the drug failed to meet the joint aim of reducing cardiac attacks and improving survival in patients undergoing coronary artery bypass surgery, it did satisfy secondary endpoints, the firm adds.

IHE – Integrati

In the late '90s, when radiologists, hospital IT experts and manufacturers - represented by the *Radiological Society of North America* (RSNA) and the *Healthcare Information and Management Systems Society* (HIMSS) got together to ensure security for hospital digital data and to simplify the use of standards, the result was the founding of the US-based 'Integrating the Healthcare Enterprise (IHE).

IHE's Technical Committee analyses existing standards, DICOM and HL7, in annual cycles, to assess their usability. They also develop scenarios for the description of daily data exchanges, as well as a Technical Framework - the basis for anyone wishing to join the IHE initiative. IHE does not set new standards but defines the positions within existing standards that are still open or variable to achieve their clear use. Once the manufacturer has adapted its products to meet those existing standards, they can test the products during 'Connectathons' (a connection marathon). The results are then demonstrated during large congresses held by the RSNA, the HIMSS as well as French, German, Italian and British Radiological Societies. These results are also to be shown in November, at MEDICA 2003.

In 1999, the European IHE committee was founded, to equally support firms 'across the pond'. The healthcare system in Europe is a lot less homogenous than in the US. There are many different political regulations and laws that have significant consequences for the implementation of digital systems.

European requirements are integrated into the international Technical Framework via suggestions made to the international Technical Committee - the integration of German vowel mutations (umlauts) being integrated into the framework, for example, and the now optional data fields describing race and religion - which were formerly compulsory.

The regulations cover all hospital data transfer - from patient admission to discharge, the objective being an uninterrupted, digital data stream in the entire healthcare system, so that wrong input can be avoided, no unnecessary searches are required and all information is accessible at any time and any place.

To ensure that the complex data information system can be fully shown, the system defines 'actors' who can undertake certain activities (transactions) within the system, which means information is transferred within clearly defined channels and formats. 'Integration Profiles' were created to ensure a clear overview of the complex potential for data exchange, for both users and manufacturers. These profiles describe all typical situations in hospital data exchange and communication. So far, ten integration profiles have been activated in radiology (see table).

Scheduled work and information flow

Organisation and homogenisation of the entire data flow, starting from the admission of the patient in the healthcare institution, transfer of data into the departmental systems within the hospital (such as radiological diagnostics), transfer into the separate modalities and picture archives.
Simultaneous echo to all other systems connected.

Patient Information Reconciliation

If data are incomplete, or if data have to be corrected due to changes in patient demography, this information is automatically transferred to all subsystems. Examples for this could be an unknown patient admitted following an accident or a name change required due to marriage.

Consistent Presentation of Images

The digital transfer of data has to be done in a way that maintains the correct focus, contrast, enlargement and labelling of the image. The image must remain consistent and comparable even if the image is shown on different types of monitors or printed on different printers. This can be achieved through consistent use of the DICOM standards.

Image marking

This integration profile facilitates individual marking of digital images or series of images - the digital version of "post-it" notes stuck to the sleeves containing X-ray images. This means that those images relevant for the diagnosis, or those that should be discussed at the next case conference can be clearly marked.

Structured diagnosis with images and measurements

IHE defines a flexible format based on the DICOM standard for archiving and exchange of structured diagnosis documentation. Apart from references to relevant images, the diagnosis can also contain machine readable codes (for diagnosis encoding, for example) and measurements.

Basis of IT security

With the increasing use of information technology hospitals are becoming more dependent on the correct functioning of these systems. IHE defines basic concepts for the security of interfaces between different IT systems in the hospital to prevent accidental as well as intentional changes to data.

Presentation of grouped procedures

Imaging diagnostics is increasingly carried out in its anatomic context. CT thorax and CT abdomen examinations are done simultaneously. However, differentiation between separate areas is still carried out, to check the procedure - this integration profile enables separate imaging of different body areas.

Communication of accounting data

The integration of profiles norms and transfer of accounts data (insurance status, services provided in the hospital etc.) from Hospital Information Systems (HIS) and Radiological Information Systems (RIS) to a central accounting system - called Charge Processor - will soon be introduced in Germany, along with the introduction of diagnosis orientated case charges.

Work and data flow for image processing

This integration profile describes image processing, such as a 3D reconstruction, MPR or MIP, computer assisted diagnosis for mammography or thorax diagnosis.

Access to radiology information

Access by external organisations to the radiology archive, as well as access by internal users in the radiology department, can be achieved via DICOM. Through careful definition of the interfaces the IHE facilitates a plug-and-play-installation for access to the image archive.

Organisation

IHE is organised into various sub-committees. The illustration presents an overview over the way these committees are networked on international, European and national levels. This status will be changed during RSNA 2003. It is likely that the information structure will be slimmed down and the organisation split into IHE-International, IHE-America, IHE-Europe, IHE Asia-Oceania and IHE-Africa. National IHE initiatives work under their respective IHE parent organisations (registration: Professor B. Wein).

The committees' objectives

The IHE Planning Committee determines the strategy for the new IHE year. It develops integration profiles, which describe work processes in a clinical environment. It is also responsible for further strategic planning, and decides which other disciplines are to be integrated into the IHE network and which demonstrations are to take place during the RSNA and HIMSS congresses. It maintains contact with other, international IHE committees and ensures homogenisation of the IHE concept.

The IHE Technical Committee ensures the technical conversion of the integration profiles. Based on precise observation of the standards (particularly DICOM and HL7), the mandatory fields in the standards are clearly defined for the integration profiles and the Technical Framework is adapted annually. This is the basis for the implementation of programmes in the IHE-conforming products of participating companies. It is also the basis for the automatic test programmes (the MESA tools of the MIR) used prior to a Connectathon, to pre-check all participating products. This committee also checks any suggestions made by the national or European IHE committees and integrates them into the Technical Framework. The body consists of representatives from users and manufacturers. Participation is voluntary and free of charge.

Naturally, the European IHE Committee is in charge in Europe, but keeping close contact with the international body. This committee summarises national suggestions and additions and prepares them for public discussion. Following a period of time - when the proposed changes are discussed - potential additions are modified then presented to the international IHE committee for integration into the Technical Framework.

The European committee is solely responsible for the migration of the IHE concept in Europe - for there are many laws and regulations governing European healthcare systems to be taken into consideration. Additionally, the aim is to create a basis for smaller companies who would otherwise not be able to achieve IHE conformity.

EIC arranges training for manufactures to ensure their products comply with the latest IHE standards. Members also participate in the national committees and use their knowledge to help homogenise the digital data world. EIC organises and oversees the annual European Connectathon, to prepare national product demonstrations, and they provide participants with the necessary tools for this, as well as running a website covering general and specific information (www.ihe-europe.org).

The national IHE committees work in their own countries to ensure the implementation of IHE guidelines. They organise a technical manager, define the contents of national demonstrations and decide which products can participate in the demonstra-

INTERVIEW Prof Berthold Wein

An interview with the Chairman of IHE Europe,

Prof Berthold Wein MD, Senior radiologist at RWTH, Aachen, member of the IT-ad hoc Group of the European Association of Radiology (EAR), deputy chairman of the Working Group Information Technology (AGIT) of the DRG, member of the EIC and NIC Germany

BW: Radiologists were the trailblazers in the IHE movement. However it was always our explicit intention to reach out to other disciplines - and we have branched in two directions. One is laboratory medicine, which is gaining considerable interest in France. Our French colleagues, with Japanese colleagues, have successfully adopted five integration profiles, describing laboratory workflow and cooperation with the hospital management system and any other user, which means we will soon be able to integrate laboratory medicine into IHE.

Now cardiology is playing a major role. At the ACC, in the US, cardiologists agreed to cooperate with IHE, and a cardiology section was founded - which has already reached Europe. Another very interesting discipline is information technology (IT). Obviously, this covers a wide area, but for the IHE the involvement is primarily safety standards. In the five new integration profiles developed in the US, security plays a major role. The profiles stipulate that a time server must be installed that provides a guaranteed time for all systems wanting to participate. Another important feature is that certain fixed routes are established that are secured in a special way. This means one cannot simply enter the system and cause havoc. All security-related activates are documented and archived on a central server.

This does not only represent security, but in the US that is one of the major issues since the PAAH HIPAA regulation forces medical professions to provide secure lines and secure data - also for patients. In Europe we do have high safety standards. However, for IHE in Europe this 'American issue' is important because many companies, particularly in imaging, have European headquarters and carry out business in the USA.

tions. The national committees aim to have as many representatives as possible from the healthcare sector. It has turned out that a key working group deals with most preparations, whilst other members check on any proposed changes. Among these are users (radiologists), representatives from industry and representatives of professional associations (Germany - ZVEI and DRG; France GMSIH and SFR). Members from other healthcare organisations, hospital administration departments, federal and regional ministries, medical insurers associations, IT groups, IT manufacturers associations etc., are also invited, for a broad representation across the entire healthcare system.

So far, national committees have been established in Germany, France, Great Britain, Italy and Norway, all with different degrees of organisation.

Promotion

IHE is based on the voluntary participation of members on committees. There is a lot of support from the RSNA and HIMSS in the USA, and from the EAR, ECR and COCIR in Europe, as well as from the EU through the General Secretariat XIII with IST tenders. Many other organisations also significantly support the IHE process in Europe.

Connectathon

Two Connectathons are held annually - the next being in the USA this October followed by the European event in April 2004.

At the second European Connectathon - April 2002, in Paris - 33 companies (excluding national subsidiaries) presented 61 systems. Coming from Belgium, Germany, France, Ireland, Italy, The Netherlands, Austria, Sweden, Switzerland and the US, representing differences in three national markets (Germany, France, Italy), this was quite a challenge. At the 2001 Connectathon (USA) there were 31 participants, with 70 systems.

In Aachen this spring, 46 companies with 79 systems from over 10 countries took part in the Connectathon.

As explained, the event helps test whether competing systems comply with the specifications set out in the technical framework. According to guidelines set out by the national IHE committees, the actors and transaction within the systems are reconstructed and the integration profiles are then tested. To ensure conditions are as close to reality as possible, as many systems as possible are connected during these events. Different scenarios from daily hospital life are reconstructed and the data transfer is closely observed. At the end of the Connectathon, scenarios to be shown during national demonstrations are tested. Only systems that comply with the strict guidelines are listed. Successful participation in the Connectathon is a prerequisite for participation n the national demonstration during the congresses.

Demonstrations

At the large congresses, as previously described, the inter-operability of systems is demonstrated to the public. In scenarios close to daily work processes the seamless flow of data from a patient's hospital admission to registration with separate departments and requests for examinations, planning, archiving, evaluation of results and reporting back of results to the system, is reconstructed and made transparent for the user.

In 2002 four large demonstrations were planned, at the Hopital Expo in Paris, the German Radiology Congress in Wiesbaden, the Italian Radiology Congress in Rimini and the French Radiology Congress in Paris. During these, the organisers constructed virtual hospitals where everything from the admission of a patient to examinations and archiving of results and print media could be closely observed.

This year demonstrations were carried out at the Hopital Expo in Paris, the German Radiology Congress in Wiesbaden, the Italian Medicine Physicists Meeting in Perugia, the UK Radiology Congress in Birmingham and the Journee Française Radiologie in Paris.

One example of the current planning for the IHE stand in Wiesbaden is illustrated with the CAD image on these pages. Three virtual hospitals (black, red and gold) are shown, where actual, commercial computer systems demonstrate patient data flow from start to finish. Visitors are led through these hospitals in groups, the data processes are explained with the help of scenarios and the advantages of the IHE systems are made transparent. It is easier to explain the connections and workings of the systems if the user has immediate experience during these demonstrations than if only theory is relied upon.

The current layout of the German Radiology Congress integrates two virtual hospitals and a special exhibition where special integration profiles are demonstrated (security, consistent imaging).

Outlook

Although introduced for radiology, the IHE initiative can reflect the entire healthcare system. Additional features for laboratory medicine, cardiology, pathology, ophthalmology and dermatology are scheduled. The IHE system is also likely to be used for out-patient care. The final objective could be the entire networking of the healthcare system, with access to patient data possible across the board and information available in the right place at the right time whilst adhering to strict security guidelines.

ng the Healthcare Enterprise

Professor Berthold B. Wein outlines the work of IHE committees and members to advance information technology for healthcare by streamlining data flow in hospitals

As of August 2003 the following, additional initiatives can be listed:

- Laboratory Medicine: Active Working Group France-Japan, five integration-profiles
- Information Technology: Five integration profiles in the US
- Start of co-operation with the ACC (American College of Cardiology)
- Start of the cooperation with the ESC (European Society for Cardiology)
- Formation of Initiative IHE-N (Norway) and IHE-DK (Denmark)
- Formation of guidelines for integration-statements to allow better product comparisons.

by Daniela Zimmermann of European Hospital

On the other hand, what our US colleagues are doing is very positive - because they did not have any relevant security structures for a long time. We receive well-structured safety standards, which we can use and elaborate on in Europe. This means we are well on the way towards international security systems.

DZ: *Does this mean the Americans will profit from European IHE activities?*

BW: The fact that the Americans are contemplating creating an international IHE is interesting. This would be a significant modification of the original IHE concept. Currently, activities focus on the US because the international bureau is located within the RSNA. During the international conference in London (June) we talked about becoming an international organisation with different sections such as IHE-Europe, IHE-US, and IHE-Asia etc.

DZ: *I thought an international IHE already exists.*

BW: That is correct. The Technical Committee sets rules according to which communication should happen. This Committee is situated in the States. Moreover, there are substantial funds available in the States to allow the committee to work and produce documentation.

DZ: *Which then will be applied 1:1 to Europe?*

BW: Many suggestions come from Europe. The laboratory, for example, exists only in France, and was 'exported' from there. It is interesting, by the way, that the French cooperate very closely with the Japanese. These two countries want to tackle laboratory medicine. That is a big step forward since the Japanese tended to do their own thing. But in lab medicine the Japanese were very open and cooperative with the French.

The French, Italians and Germans were the first to join IHE, and cooperation with the Norwegians is clearly the most intense. They founded a very active interest group. The British have their own event at the British radiology conference, but they do indeed participate. They are in the process of developing a glossary, which translates the IHE strategies into easy-to-understand schemes, enabling everyone who's interested to become involved.

According to the Technical Manager of the Italian group the Italians want to move towards Open Source products. That means software that is available on the internet and can be customised for individual needs and requirements. The Italians are great at defining projects and trying things out. They strategically incorporate the technical and management-oriented parts of IHE. For example, in the north of Italy a 50 km network has been established in which several larger hospitals cooperate and implement telemedicine projects. That works very well.

DZ: *Does that mean they take up whatever is useful to them?*

BW: Yes, and we are happy about that and that they are so active. In Germany, it is very difficult at the moment to raise funds for investments.

DZ: *What is the long-term objective of the IHE? You represent neither the industry nor the hospitals. You annoy the industry because you cost money and you annoy the radiologists because now they have to deal with technical details which they may find totally boring.*

BW: The long-term objective is to enable communication and data exchange among all healthcare participants in a uniform way. This encompasses inclusion of general physicians' practices - particularly important in Germany with its two-pronged approach of physicians in practice and physicians in hospitals, because that's where there can be a lot of savings potential. The short-term objective is to provide an entire hospital with an information system that consists of many different parts, but where the parts still communicate with each other. The radiologists have started - we are the furthest ahead.

DZ: *To reach your objective, comprehension of the issues involved must move far beyond radiologists. Is IHE something that hospital managing directors must understand?*

BW: That would be excellent, because he could establish a hospital policy that only IHE compatible instruments should be purchased. I concede we've a lot to do there. But don't forget: laboratory medicine, cardiology and IT are joining the ranks of IHE which means we have four major disciplines in big hospitals speaking with once voice. It's only a question of time till dermatologists, surgeons etc. follow suit.

DZ: *Complete integration is still a long way off?*

BW: Maybe not so long. Success stories are very promising. At the radiology conference we presented three European projects - Geneva, Mainz, and Pisa - where IHE has been implemented to a great extent. Not in the entire hospital, I admit, but in crucial departments. And in these hospitals it turned out that IHE could save a lot of money. If we can continue to prove that integration is cheaper than chaos, we win.

The companies push IHE activities because they understand that interface production with many small outfits costs a lot of time and energy and in the end it doesn't pay. The service is no longer bearable and therefore the companies are interested in standardised communication equipment - even if IHE needs some investment up front.

The advantages of IHE for users - in the future, the IHE initiative will provide integration statements - that is, a detailed spec sheet for each IHE participant's product - an integration profile, features etc. If you need to buy new equipment, be it for the laboratory, radiology, cardiology or IT, you can check on our website to find which companies offer what IHE compatible products. The beauty of it all is that you can compile a shopping list and you can be sure that all the items you selected communicate with each other - plug and play. Presently, if you buy a piece of equipment that you like, there is no guarantee that it will fit in your system.

DZ: *Don't you gain market power with that concept?*

BW: We are not interested in market power; we are interested in systems that work. Quite the contrary, IHE wants to prevent the development of a one-sided market power. We have an entirely independent organisational structure. We want the healthcare system to work - as cost-effectively as possible. Since everything is becoming increasingly expensive we must try to reduce costs, whether for new equipment, or overheads. That means we have to provide hospital managers with the tools to make the right choice. If those managers can go out and buy 'pret à porter' products (off the shelf) that work and fit, they will be happier than buying expensive 'haute couture' stuff which doesn't fit.

10/11 September 2003

Excerpts from the 6th Symposium on Nursing Careers in Surgery (Lower Saxony)

Events organised by the DBfK LV Lower Saxony (est. 1990) attract up to 900 participants from Germany, Austria and Switzerland. The organisation focuses on medical issues plus national and international political and legal issues and promotes advanced surgical nursing training by setting up training in surgery and endoscopy. 50-60 firms sponsor the events (organised by the Braunschweig Research Institute for Healthcare).

Additional current issues under discussion: DRGs, optimisation of workflow, cost cutting and quality care assurance, plus risk management. 'There are many good concepts for these, but we also need staffing and finance to put them into practice. The most important standard for patient care should be: I would like the patients to have the same care that I would like to receive,' said Petra Ebbeke, Working group organiser. (Further details: p.ebbeke@t-online.de)

Validation for sterilisation

By Joerg Sisolefsky, of Instruclean West, Duisburg, Germany

All stages of cleaning, disinfecting and sterilisation of medical devices must be documented in a comprehensive way. In compliance with DIN EN ISO 14937, validation means that a process exists to cover documentation and interpretation of results needed to prove that a procedure or products consistently comply with predetermined specifications. Thus, during the care of medical devices, validation is a precondition for quality assurance.

In Germany, the regulatory framework is as follows:

Social Code (SGBV) ß 137: Hospitals are inter alia obliged to participate in quality assurance measures.

Medical Devices Operator Ordinance, (MPBetrVO) ß 4, 2: Cleaning, disinfection and sterilisation require adequately validated processes.

DIN 58946, Part 6, Operation of large-scale sterilisers in the health care sector

The Robert-Koch-Institute's (RKI) guidelines covering hospital hygiene and prevention of infections explicitly mention compliance with existing standards and demand process validation.

Prior to validating a sterilisation process, the following quality assurance measures are required:

- Risk evaluation and classification of medical devices according to the RKI
- Procedures and instructions inter alia for packaging, loading and release
- Manufacturer's sterilisation instructions for medical devices (products + packaging)
- Packing lists
- Test and determination of steam and water quality.

Validation of a sterilisation process comprises three elements:

1. Installation qualification (IQ)

- Safety test
- Metrological control according to MPBetrVO ß 11
- Operational components test
- Test of the steriliser as a medical device
- Test of the steriliser as a pressure device (e.g. vessel inspection)

2. Operational Qualification (OQ)

- Comparison with pre-defined limits in accordance with DIN 58946-6 with standardised reference loads
- Performance test according to EN 285

3. Performance Qualification (PQ)

- Determination of the configuration to be tested according to DIN 58946
- Documentation of results (successful sterilisation)
- Documentation of reproducibility of results
- Evaluation of the relationships between steriliser, procedure, product and packaging

Following the pre-defined tests (documents, visual inspection, measurements, biological inspection), the procedure must be evaluated according to DIN 58946, part 6, table 3, using these evaluation criteria:

- Reproducibility of the process
- Occupational safety
- Sterilisation effect
- Protection of sterilised goods from recontamination

Upon completion of all tests, the person responsible for the tests forwards his/her validation report and, according to DIN 58946-6, must have adequate knowledge, gained from professional training and practical experience.

Practice-oriented information for initial and re-validation

Further standards:	DIN EN ISO 14937	Sterilisation of medical devices
	DIN 58946 Part 6	Steam sterilisers
	DIN 58948 Part 13 + 16	Low-temperature steam and formaldehyde (LTSF) sterilisation
	DIN 58948 Part 6	Ethylene oxide sterilisation
	DIN EN ISO 15883	Cleaning/disinfecting (draft)
	DIN EN 554	Validation and routine monitoring for sterilisation with moist heat

THE DAILY USE OF ORTHOPAEDIC NAVIGATION SYSTEMS

By Heike Klaproth and Dr Frank Gossé, of Klinik 3 im Annastift Hannover e.V.

Navigation systems have been routinely used in orthopaedic and trauma operating theatres for the past two years. Various systems were developed with more emphasis on the technical aspects, rather than practicability in routine operating conditions. Various conflicts occurred due to preparation and sterilisation of specific instruments and the acceptance of these new systems by surgical teams.

We describe the use of orthopaedic navigational systems for knee and spinal column surgery, from the standpoint of a professional surgical team. Apart from general rules for theatre sterility and instrument management at the operating table, expertise in the use of electronic instruments and the organisation of surgical navigational systems in a theatre are essential. Demands made on the nurse who collects and distributes instruments for additional non-sterile work at the navigation computer transcend what is usually needed in this role and must be clearly defined and practised prior to successful implementation of a navigation system.

The paper contains useful information on re-processing, sterilisation and storage of navigation systems. Manufacturers' detailed instructions for re-processing must be followed, for their scope is clearly defined in government regulations for medical devices. Liability becomes a major issue when these procedural descriptions don't exist, or when instruments are unsuitable for re-processing.

A surgeon's interest is focused on long term effects. They accept more complex surgical procedures because improved implantation and instrument positioning generate better long-term results. So it is in a surgeon's interest to glean as much information as possible from navigation equipment. Data acquired in the theatre enables precise answers to specific questions. Intra-operative data acquisition, carried out during surgery, is an additional burden, both on time and the system. However, this is not in the interest of surgical assistants, because they are responsible for ensuring additional procedural steps do not impair the quality of their work with instruments.

Surgeons take time to adjust to the new sequence of events because they can deviate considerably from conventional procedures and complicate moving between navigated to conventional surgical techniques. Spinal column navigation exemplifies this, when real-time representation is eliminated when positioning Pedikelin screws, the usual procedure must be modified. It is therefore crucial that a surgeon has specific, detailed knowledge about how navigation devices function, as well as long-term surgical experience.

Economic aspects of a navigation operation must also be discussed, due to DRG financing systems. When there is a flat-rate payment and operating costs are high, additional operating time burdens resources.

Reprocessing flexible endoscopes/accessories

A recommendation from the Robert Koche Institute, published in Germany's Federal Health Information, April 2002 replaces the annex to 5.1 of the regulation on hospital hygiene and infection prevention pub:1988, No.11. 'Requirements for endoscopic measures'. The recommendation elaborates on the general hygiene requirements for the reprocessing of medical devices (Pub: 11/2001).

Details: www.rki.de/Krankenhaushygiene

The recommendation's introduction and background information analyses the status of endoscope reprocessing, such as infection risk, micro-organisms involved, prions, sources, causes and transmission of infections. Based on this analysis, objectives and general requirements endoscope and accessories reprocessing were developed (table 1). Checklists provided in the recommendation attachment facilitate implementation.

Reprocessing procedures for endoscopic accessories have changed considerably, and the recommendation provides a checklist for the following:

1. Cleaning
2. Ultrasound cleaning
3. Rinsing off the cleaning solution
4. Disinfecting
5. Neutralisation
6. Drying and function test
7. Sterilisation
8. Storage

Additionally, and for the first time, occupational health and safety measures for personnel are considered. The recommendation explicitly points out that endoscopy staff are at risk of infection and contamination through chemicals used in disinfectants, and provides occupational health information.

	Manually, partially mechanical	Mechanical
Pre-cleaning	Immediately following an examination in the examination room: wiping off the endoscope cover and rinsing the channels	
Brush-cleaning of channels	Thorough manual cleaning in reprocessing room endoscope (suitable, disinfected brush to be used for each channel)	
Cleaning rinse	Manually in the reprocessing room	In the CDD-E
Disinfection	Bubble-free Rinsing with a disinfectant	In the CDD-E
Final rinse	In the reprocessing room	In the CDD-E
Drying	Manually in the reprocessing room (using compressed air)	in the CDD-E

Table. 1: Overview of different reprocessing procedures for endoscopes (CDDE = cleaning/disinfecting devices for endoscopes)

Action for accidental injuries

Wolfgang Borchert

Injuries caused by potentially infectious material are still the majority among occupational accidents in hospitals. Infections such as hepatitis B, hepatitis C and HIV dominate - although other infectious diseases also pose a risk, they occur less frequently. Individual cases of skin tuberculosis (TB) after injuries with material containing TBC, e.g. infected lymph nodes, have been recorded. The probability of catching hepatitis B from contaminated material is c. 30% for people who are unprotected. For hepatitis C the figure is 3% and for HIV about 0.3%.

If someone has been injured, bleeding should be induced immediately, to prevent pathogens entering the circulation. The injured area is milked against the blood flow, then disinfected. A mucous antiseptic can be used if there was contact with mucous membrane. In high-risk injuries (e.g. from patients with HIV and high virus load) bleeding can be induced surgically. Generally, if not already done preoperatively, the following parameters should be checked: hepatitis B surface antigen; hepatitis C antibodies; HIV antibodies. Additionally, if there is no known hepatitis B vaccination, hepatitis B antibodies should be measured in the injured person. Checks for these diseases should be repeated routinely after three and six months in order to detect an infection - unless the injured party was vaccinated against hepatitis B and has an antibody titer of >100 U/I, or in similarly after an HBV-infection. If the antibody is between 10 and 100 U/I, a dose of hepatitis B vaccination should be administered immediately, or at least within 24 hours. If the antibody titer is under 10 U/I, hepatitis B-immunoglobulin (0.06 ml/kg body weight) should be administered. * Injuries contracted from material that cannot be assigned to a specific patient are considered hepatitis B contamination.

It is impossible to take effective post-exposure measures following hepatitis C contamination. A monthly hepatitis C serology (HCV antibodies) is recommended - for six months. Also, when necessary, direct evidence of the virus, via CHV/PCR, should be done, with bi-monthly controls of the transaminases, to enable early detection of hepatitis C virus. By using Interferon early on, over 90% of chronic progress of this disease can be prevented.

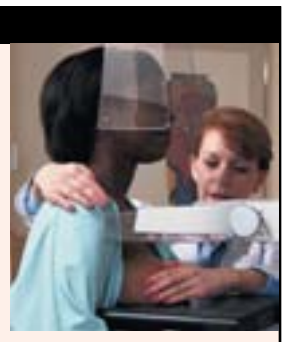
If HIV infection of the patient has been shown, Post Exposition Prophylaxis (PEP) should be administered following percutaneous injuries with injection needles, deep injuries with visible bleeding and in superficial injuries with non-intact skin, and a high virus load of the patient. In superficial injuries - with surgical needles or mucous membrane contact, or contact with damaged skin, fluids, and a high virus concentration - the injured person should receive PEP. When there was contact between intact skin or mucous membrane and other fluids - e.g. urine and saliva - HIV-PEP is not recommended. This also holds true for percutaneous contact.

PEPs should be administered immediately after an injury, within the first four hours, or in individual cases up to 72 hours later. The HIV PEP is done with a triple combination of two reverse transcriptase inhibitors and a proteinase inhibitor. Standard medications are Zidovudin (2 x 250 mg/day), Larnivudin (2 x 150 mg/day) and Idunavir (3 x 800 mg/day). Idunavir must not to be given to pregnant women.

PEPs should be given under a doctor's supervision, with regular blood counts, liver values, creatinine, urine and blood sugar checks throughout a four-week period. When medications used are not approved for PEP, we strongly recommend informing the patient in writing, although, due to the therapy's short duration, serious side effects are rare. Gastrointestinal problems, including fatigue and headaches are relatively frequent. Kidney stones (Idinavir), diabetes mellitus (proteinase inhibitors), pancreatitis and lactate acidosis are rare side effects with the medications listed above.

● *Source: Dr Wolfgang Borchert, Occupational, Internal and Trauma Medicine, Staedtisches Klinikum Braunschweig*

Aurora2 - the elusive gene



UK - Scientists at the UK's leading breast cancer research centre have discovered how a notoriously elusive gene can increase cancer risk. The gene, Aurora2, is over-expressed in 16% of all breast cancers and uncovering how it works heralds an important step towards new, targeted breast cancer treatments.

The joint work carried out by experts from the Breakthrough Toby Robins Breast Cancer Research Centre and the University of California San Francisco (UCSF) was published in Nature Genetics (August).

Aurora2 has previously been found to be over-expressed in up to 94% of the most common form of breast cancer, invasive ductal adenocarcinoma. Scientists found that one version of Aurora2 was less able to interact with other genes in the cell, making it more likely that these cells become cancerous.

The researchers hope this information can be used to indicate who will or won't get breast cancer and enable the development of new, targeted drugs to help women with a high-risk version of the gene.

Dr Spiros Linardopoulos, Head of Breakthrough's Novel Drug Targeting Team, said: 'Although genes like Aurora2 carry a lower risk of causing breast cancer than well-known, high-risk susceptibility genes like BRCA1 and 2, they may be a more common cause of cancer in the population.'

Professor Alan Ashworth, Director of the Breakthrough Research Centre, was a leading member of the team, which discovered the BRCA2 gene in 1995. He added: 'Understanding more about the genes involved in breast cancer and the biology of the breast is fundamental to everything we do here at the centre and is essential if we are to find better diagnostic techniques and safer, targeted treatments for the 40,000 women and men diagnosed in the UK each year. The analysis of the role of Aurora2 is a significant and welcome step in that direction.'

This discovery of the role of Aurora2 is part of ongoing research programme at the Breakthrough Toby Robins Breast Cancer Research Centre (at the Mary-Jean Mitchell Green building at the Institute of Cancer Research). Opened in 1999, the centre employs 85 world-class clinicians and scientists. Currently comprising seven teams they are focusing on: Gene Function (understanding more about the genes which cause breast cancer); Molecular and Cellular Biology (why some tumours spread while others don't); Pathology (looking at normal breast tissues and seeing how they differ from breast cancer tissues); Novel Drug Targeting Team (finding new drugs which specifically target breast cancer genes, causing fewer side effects); Apoptosis (finding out why cancer cells do not die but keep multiplying); Molecular Radiation Oncology (looking at the genes which can help deal with cancer-causing substances); and Gene Regulation (discovering how cells respond to oestrogen, a hormone which has a role in the development of tumours).
Details: www.breakthrough.org.uk.

New virus and breast cancer

Australia - A virus called HHMMTV has been found in 40% of women with breast cancer and in 50% of men suffering the disease, but in tests carried out on women without the disease, only 2% had the virus, according to a study* carried out at Sydney's University of New South Wales and the Prince of Wales Hospital The scientists indicate the virus may be the human form of the mammary tumour virus which causes 95% of breast cancer in mice. Further research is needed, but the researchers hope the discovery that a virus may be involved in the disease could lead to new treatments.

Caroline Ford, research team leader said, 'Many people believe breast cancer is purely hereditary, but hereditary breast cancer is estimated to account for only 5% of all cases of breast cancer. So we have little idea about the cause of 19 out of 20 cases. This preliminary research indicates that a virus may be involved. If it can be shown that the virus causes cancer, the possibility of a preventative vaccine for breast cancer would be of enormous consequence. However, there's still a lot of work to do to get sufficient proof of the role of the virus.' (*Pub: *Journal of Clinical Cancer Research*. The findings were also presented at Australia's Fresh Science Forum, during the government sponsored 'Science Week').

Cancer 'cuts and pastes' DNA

France & England - Breast cancer may use similar tools to a word processing computer programme to wreak havoc in the body, according to a study (published: *Genes, Chromosomes and Cancer* journal) by scientists at the Institut Paoli-Calmettes in Marseilles and the Hutchison MRC Research Centre, University of Cambridge, for they have found that the disease 'cuts and pastes' genes to create dangerous new combinations of DNA. Called chromosome rearrangement, they believe this plays a key role in spreading the disease.

The scientists tested the impact of breast cancer on key genes, labelling them with fluorescent dye for tracking. This showed that a gene called heregulin, which usually helps cells to grow and divide, had been cut from a chromosome and in another piece of DNA had been pasted in its place. This rearrangement was found in cells from five different breast tumours and two pancreatic tumours. The scientists suggest the chromosomal rearrangement may help spread a cancer.

Cutting and pasting the gene to a new position may make it over-active, or active in the wrong kind of cell, sending the growth of cancer cells spiralling beyond control. It might also help create a powerful, cancer-producing hybrid gene.

'We found that, in breast cancer the rearrangement of chromosomes isn't random; a particular rearrangement happens over and over again, suggesting that it plays a key role in the development of the disease,' said Dr Paul Edwards at the Hutchison MRC Research Centre.

'Moving parts of a gene around can cause real problems. Understanding how our genes can be mixed around during the cancer development is crucial.'

The research was funded by Cancer Research UK, where the director of clinical research, Professor Robert Souhami, commented: 'If a genetic fault happens again and again in cancer, it indicates that the fault is making a real contribution to the disease's development. Identifying such cancer-causing errors, and working out how they might be contributing to cancer, is an exciting area of research that may bring us new targets for anti-cancer drugs.'

Breast tissue grown in pigs

Australia - A new technique that enables breast tissue to grow on a pig may help replace lost tissue in mastectomy patients, if it can be replicated in humans.

Using a pig's own stem cells, researchers at the Bernard O'Brien Institute, Melbourne, told the World Congress of Plastic Surgery that they succeeded in growing breast tissue on the pig after first using a small implant designed to allow new blood vessels to grow inside its chamber and encourage fat tissue to grow, which could be used for breast reconstruction, following breast cancer surgery - or other surgical repair work, for example on burns, or birth defects.

Professor Wayne Morrison, head of the Bernard O'Brien Institute, said that by achieving the breast growth in a pig, that: '... by using the chamber model we have created, we will have the potential to grow fat tissue within humans, which will assist in breast reconstruction, augmentation and contour filling.' He also added that it might lead the way to people growing their own organs. 'This development could make some kinds of organ transplants obsolete in the next decade,' he added.

An additional advantage to using 'own body' cells in this way would also present far less likelihood of rejection.

£1.5 billion IT for home care

The market for e-health technology and services for long term care for the elderly, could be worth up to £1.5 billion per annum, according to a report* published by Wireless Healthcare, which produces research and analysis for investors, healthcare providers and IT vendors. Demographic trends indicate that the elderly represent a customer base that will still be expanding in 2050. Thus, IT vendors faced with slowing, or flat corporate and consumer markets, could derive valuable revenue growth by building e-health solutions for their home care, the report suggests.

Over the next two decades the 65 years+ population will rise 40%, which could increase the annual budget for long-term care from £11 billion to £15.4 billion. The UK government recently allocated £100 million to be spent on schemes to ease 'bed blocking' in NHS trust hospitals, largely caused by post-surgical elderly patients needing long term care.

However, the report '*Caring for the Aged - Long Term Problem or Long Term Opportunity*?' warns investors and IT companies that some e-health market sectors could soften. The pensions crisis, and any future fall in UK house prices, could reduce the disposable income of tomorrow's senior citizens. Presently, the elderly personally pay £4 out of every £11 spent on long term care. This amount could fall, hitting suppliers who are targeting the private market for home health monitoring products. Additionally, the UK government might introduce fines for local authorities whose elderly citizens are causing bed blocking, which could reduce co-operation between local authorities and NHS trusts that are already jointly working on e-health projects.

However manufacturers could make e-health products more competitive by agreeing a common standard and common development platform, thus reducing manufacturing and development costs. The report also points out that vendors face government procurement departments, which are increasingly reluctant to take risks, due to the failure of a number of high profile IT projects.

Some existing e-health services examined were cumbersome and labour intensive and the report suggests the use of 'always on' mobile networks, such as GPRS and 3G, as one way e-health could be simplified and more cost effective

•'*Caring for the Aged - Long Term Problem or Long Term Opportunity*' costs £56 + vat (printed report), or £49 + vat (electronic).
Details: www.wirelesshealthcare.co.uk

Detecting database errors

Munich hospital tests new software

A prototype tool to detect administrative errors has been developed by Dr Sven Nissen-Meyer and team, at the Institute for Clinical Radiology, University Hospital Munich-Grosshadern. The automated system discovers any non-existent patients and duplicate records. The tool, presently undergoing tests in the digital radiology department, where spelling errors, mistyped numbers and confusion between various forms of patient ID made it difficult for radiologists to match images and reports to the right record, or retrieve archived results from earlier examinations.

The hospital information system (HIS) issues a unique 10-digit patient number (patient ID) and 10-digit admission or visit number (admission ID) to all patients admitted to the hospital. This data is then automatically transferred to the radiology information system (RIS), within four minutes of admission. Dr Nissen-Meyer pointed out that errors can arise if former patients are re-admitted under a different name or if manual entries are miss-spelt in the RIS, or if numbers are inadvertently switched, or the two 10-digit identifiers are confused. 'Then you have multiple patient records with the same patient ID number, and patient IDs with the wrong name, and vice versa. You also get multiple HIS admission records with the same admission ID,' he added. The programme can compare three components identifying a patient - name, patient ID and admission ID - on the RIS-PACS with those on the HIS. Inconsistencies are flagged, and incorrect 'triples' are saved to a separate database.

Over 600,000 admission records and just under 300,000 patient records were checked by the prototype system and it was found that 6% of the patient IDs were not in the HIS database. Similarly, 2% of patients' names and 8% of admission IDs were invalid. Dr Nissen-Meyer pointed out that this meant that 1.1% of valid admission IDs were associated with invalid patient IDs, and 0.14% of the correct IDs were incorrectly associated with an invalid admission ID.

Now used daily at the Munich hospital, the programme picks up an average of 50-60 errors each day.

Now Dr Nissen-Meyer hopes to develop a tool to correct obvious inconsistencies.

IT spend to rise $2.2 billion

USA - Healthcare organisations will gradually increase their information technology investments from $15.1 billion in 2002 to $17.3 billion in 2007, according to a forecast report from the research firm International Data Corporation, based in Framingham, Mass.

Linked to HIPAA compliance, improving patient safety, and providing them with more information via websites etc. the increase will raise annual provider spending on IT by 3-4%. Over 50% of IT investments will be on technology for clinical purposes, the report adds.

The 22-page report '*US Healthcare Provider IT Spending Forecast, 2002-2007*' gives investment breakdowns in technology segments (hardware, software, services) and provider sectors (hospitals, clinics, other healthcare services). Analysis also covers future spending in solution areas, e.g. clinical information systems, general practice (GP) management, point of care, disease management and administration.
Order e-mail: sales@idc.com. Price: $4,500. Ref.: 29722.

THE CLINICAL PATHWAY

IT companies are working on solutions to streamline case management, from a patient's admission to discharge, which should lead to shorter in-patient stays. Progress in this field is now vital because, under the new DRGs, invoicing will be based on a flat rate for diagnosis rather than on length of stay. Thus hospitals must tighten up treatment/care procedures to optimise time and costs and shorten stays. Aiming for rapid, problem-free and efficient treatments should also see an end to queues in x-ray and other departments, as well as cancelled operations.

How can this be achieved to satisfy both medical and business requirements in patient care? A 'clinical pathway' concept is increasingly discussed. This

IT PRESENTATIONS AT MEDICA 2003

involves standardising the process management of complex structures. In hospital terms, it indicates how specific illnesses should be treated, what and where treatments are happening and how much those events cost. An administrative pathway with time requirements, and a medical one, supported by guidelines, are set to determine the future of clinical routine. Inevitably, a pathway must not be so rigid that a doctor cannot leave it if the needs of an individual patient vary from the norm.

In Australia and the USA clinical pathways are already used in some 60% of hospitals. However, the sense and nonsense of pathways is still under discussion in Germany.

Standardisation - the benefits

Complex pathways involved in, say, removing an inflamed gall bladder, or treating one full of stones, must be straightened out. This intervention is poorly standardised. Neither the time sequence with which the patients are processed from admission to discharge, nor surgical procedures are currently uniform in Germany. The multitude of materials used, for example sutures and bandages, demonstrates the absence of a system.

Whoever leaves well-beaten paths to walk on streamlined avenues must leave behind many well-worn rituals. But the departure will be worth it. For example, the surgical team in a Franconian hospital saved two-thirds in laboratory costs by completely implementing process pathways. Previously, 16 post-operative blood examinations per patient were requested; now the average is 1.5, and the routine post-operative ultrasound checks, performed for many years, were recognised as superfluous and abandoned. Discharge dates were also tightened up and the logistics improved to such an extent that the in-patient stay for gallbladder treatment in the surgical ward was reduced from 6.2 to 4.7 days. Shortening stays is a great logistical achievement in an acute care hospital.

However, those who start to introduce patient pathways are not always welcomed. Possibly the biggest hurdle encountered en route to a process-oriented hospital is data transparency - often a taboo subject - and many hospitals still have not embraced an entrepreneurial culture.

Certain clinic managers may see the high data processing investments required by the introduction of clinical pathways as a stumbling block. But all roads lead to electronic data processing. Such complex processes cannot be rationally performed without computerised support. However, the software available was not tailor-made for the task and often did not fit into the work sequence. Each hospital develops its own patient pathways, and occasionally clinics even create their own software - a cumbersome and very inefficient approach. In some hospitals individual pathways are already used, in the form of electronic data processing, and the next stage for these is the paperless bedside visit with a small handheld computer - which already exists.

At MEDICA, over 330 IT exhibitors demonstrate the continuing work on the integration of the individual and specialised software islands of hospital functions into a transparent holistic system. Their objective is to represent the entire hospital and its resources, with all diagnostic and treatment steps available at any time both from a medical and financial perspective. Along with this work, leading doctors and clinic managers are defining how specific examinations, surgical interventions and case processing - the clinical pathways - are to run.

'MEDICA meets IT' is a programme of lectures and presentations on this development. The SVITG (Central Association for Information Technology in Healthcare) invites medical software users to report experiences on the introduction and use of process-oriented, comprehensive solutions. Manufacturers discuss the background of their latest workflow oriented products. A meeting between members of the software industry and hospital decision-makers will also take place at the Dusseldorf trade centre.
Fair, congress and exhibitor details: www.medica.de.

Commissioner David Byrne (left) and Dr Gunther Leiner

Ageing in Europe

In October the *European Health Forum Gastein* will take place in Austria. Christian Pruszinsky offers a preview and background to planned discussions at this important annual event

Dr Gunther Leiner (left) and European Regional Director Marc Danzon

Partners, supporters and speakers

The EHFG is a high-level discussion platform for decision makers and stakeholders in public health in Europe. For the sixth year, leading experts and politicians from the entire continent meet in the Austrian Gasteinertal to discuss and propose solutions to the burning issues of healthcare in Europe. Commissioner David Byrne (UK) will again be among the Forum's high-ranking participants, as will Ulla Schmid, Germany's Health Minister; Maria Rauch-Kallat, Austrian Minister of Social Affairs; Frank Vandenbroucke, Belgian Minister, plus state secretaries and regional presidents, WHO representatives (e.g. European Regional Director Marc Danzon), and eminent scientists such Rita Sussmuth, University of Gottingen, Jeffrey Sachs, Columbia University, or Martin McKnee, London School of Tropical Medicine, and so on.

Partners and co-organisers: Federal Ministry for Health and Women, Austria; European Commission, DG Health and Consumer Protection; European Observatory on Healthcare Systems; Land Salzburg; World Bank, and WHO Regional Office for Europe

Our ageing populations and their impact on health and social systems is of general concern - and equally so at the European Health Forum Gastein (EHFG), which will focus on this issue, in which questions arise, such as: *Does more health mean less wealth? Is more health an economic burden, which destroys wealth? Will older patients receive fewer services? Should there be an age limit for certain medical services and therapies? Should there be more or less pension cuts.*

An interview on 'Report', a German TV programme, sparked the forthcoming EHFG debate. Economics and sociology Professor Friedrich Breyer (econ. and sociology) and Professor Joachim Wiemeyer (Catholic theology), favoured an age limit for dialysis treatment and heart and cancer surgery. Prof Breyer suggested setting a limit for expensive medical services at 75 years. Prof Wiemeyer (also a consultant to the German Council of Bishops) argued that medical services must be provided above all for the young, and not every life-prolonging measure should be taken for the very old. It is only fair, he concluded, that some expensive medical treatments and therapies - other than for acute pain - should not be given to patients beyond a certain age.

That debate caused Dr Gunther Leiner, chairman of the EHFG, MP, considerable concern, for he believes it destroys solidarity and could become an ethical crossroads in Europe. Since the EU will have less say on health issues in the future, Dr Leiner believes the EHFG - which draws in Member States and regions, the European Commission, science and practitioners - is well suited for an urgently needed 'Round Table on Ageing and Ethical Issues in Europe'. 'We must not reach a point where we see the older generation as nothing but a financial burden on a health system that, in itself, is almost unaffordable,' Dr Leiner pointed out.

Spiralling costs: acute care expenses are still top, but long-term care costs are quickly increasing

According to an Institute of Higher Studies report, public health expenditures for acute care will increase from 2000-2050 between 0.7% (Denmark) and 2.3% (Ireland) of GDP. In Austria, the rate will be 1.5 %. By 2050, expenditure levels for long-term care will reach 0.9% of GDP in Ireland and 5.1% in Denmark. In Austria, these costs will increase from 0.7% to 1.6% of the GDP, corresponding with the EU-wide average. Due to the future demographic structure, the healthcare expense quota will increase by about a third.

In the Member States, France spends most on acute care - 6.2% of GDP in 2000 - followed by Sweden and Ireland. Austria, where expenses for acute care make up 4.9% of GDP, ranks in the lower third, just ahead of Finland and the UK with 4.6 % of GDP.

Healthcare expenditures increase with age

Per capita expenditures in the 85-89 age bracket are five times higher than in the 35-39 age group. Only the youngest and the oldest group don't conform to the pattern of increasing costs with increasing age.

Studies (e.g. Max-Planck-Institute) show that older patients usually opt for less expensive therapies than younger ones who suffer the same illness. US studies confirm this. Lubitz et al, of the Health Care Financing Administration, found that older in-patients generate less costs than younger ones. This phenomenon is particularly striking in the above-90 age bracket, for whom therapy costs are about 50% less than for aged 65-69 patients - perhaps explicable due to the fact that cost-benefit analyses already play a significant role in therapy decisions for very old multi-morbid patients. However, it might be equally true that older patients refuse life-prolonging treatments.

'We must not settle the crucial cost issue at the expense of the older people', Dr Leiner said. Instead, he suggests, that national social security systems undergo a thorough review and both savings potential and unnecessary services be identified. This, however, requires a transparent, goal-oriented, patient-centred and knowledge-based debate across political domains. Such a debate already exists in some countries and has generated various innovative approaches and models, currently being tested. Responsibility and sharing of the financial burden are no longer sacred cows; indeed different models for individual citizen contributions to his/her health insurance or pension have been introduced in most countries. The EHFG wants to explore how this process of learning from each other, of sharing experiences and ideas and best practices (also an issue in the Convention) can be initiated and continued at a European level.

Health - an important economic and employment factor

While public expenditures for healthcare are rising constantly, healthcare is considered the growth sector, in terms of overall economy and employment.

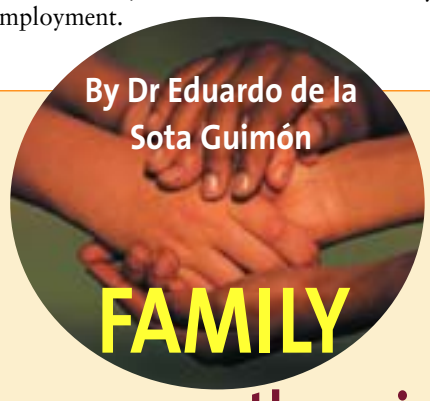
EHFG will look closely at macroeconomic conditions and at the challenges posed by the enlarged EU.

The Forum will focus on

1. Instruments for best practice investments in health throughout Europe
2. The role of, and challenges for, healthcare services in the enlarged European single market

For example, it is conceivable that, for current Member States, the Accession Countries are a source of urgently needed well-qualified healthcare personnel. The Accession Countries, on the other hand, may fear exactly that - for it would mean a drain of skills, because the best qualified personnel are usually the first to emigrate. However, there are also positive developments: increase of expertise, joint cross-border use of healthcare services or financial investment by the current Member States to healthcare institutions in the new Member States.

In addition to the discussion, there are practical examples that will provide possible solutions: regional cross-border co-operation in the Veneto (Italy) and Timis (Romania) and the Austrian/Hungarian co-operation in dental medicine.



carers pay the price

At some point in our lives, most of us may become carers for an ageing or disabled family member. Unprepared for the role, this can become very stressful and may adversely affect health. Anxiety, depression, fatigue and burnout are some of the symptoms.

Economic costs of Alzheimer disease

Studying the costs of Alzheimer disease in Israel, Berri et al (2002) found that institutionalisation was the major component of social cost. Costs increased with functional and cognitive deterioration for the community-dwelling group. With projected increases in the number of persons at risk of developing Alzheimer's, its economic impact on future costs will be significant. Beri et al suggest efforts to delay deterioration and, as a result, delay institutionalisation - crucial for cost containment.

Rockwood et al (2002) analysed the societal costs of vascular cognitive impairment in older adults and concluded they are not inconsiderable. In contrast to Alzheimer's, there is no clear gradient relating cost to severity. Unpaid carer costs are an important aspect of societal costs, even in those with only mild impairment.

Dementia - nursing home placement

Patient and carer characteristics are important determinants of long-term care placement for dementia patients. Interventions directed at delaying placement, such as reduction of carer burden or difficult patient behaviours, need to consider the patient and carer as a unit, according to Yaffe et al (2002). Research shows that Alzheimer disease carers have generally positive opinions about the benefits of hospices for themselves (Casarett et al 2002).

Acute hospitalisation

In a prospective study of dementia patients, Andrieu et al (2002) evaluated the frequency of and determined predictive factors for acute hospitalisation, demonstrating that acute hospitalisation is frequent in these patients, resulting in considerable costs. Andrew et al believe that interventions to support patients/carers to manage their loss of daily abilities, may be a practical approach to reducing the need for acute hospital admissions.

Carers

Beeson et al (2000) found that carers suffer loneliness, stress and depression. Evaluating carers of people with AIDS, age related dementia and advanced-stage cancers, Flaskerud et al (2000) found that all carers experience distressing emotions that may affect mental/physical health. As Patricia Katherine Novick pointed out: 'Many carers expose themselves to repeated stress without any relief. They forget to take breaks and vacations, or do other things that replenish batteries, like exercise, massage, and meditation. In general, they put the needs of the other above their own needs... until they experience burnout, a feeling of depersonalisation and general futility regarding life.'

Numerous studies have demonstrated that family carers of those with a severe mental illness suffer from significant stresses, experience moderately high levels of burden and often receive inadequate assistance from mental health professionals (Saunders, 2003).

This is a worldwide problem. Shaji (2003), in his analysis of the problem in Kerala (India), pointed to a clear need for more education, advice and support for families affected by dementia, and that it is essential to support these carers.

Psycho-educative group programmes for carers of demented persons living at home have shown efficacy (Hebert et al, 2003; Gerdner et al, 2002).

Spain

According to La Parra, University of Alicante, Spain (2001), women, low-income social classes, and aged people bear the greatest burden of care giving.

Roca et al, University of Barcelona (2000), studied the impact of care-giving on family carers' health and found that most were middle-aged women performing multiple care tasks, and as a result of their role their quality of life was low. As published by Prieto et al (2002), carers of dementia patients place top priority on being provided with specific materials, whilst carers of cancer patients valued response capacity and accessibility, when evaluating home care programmes.

In terms of economic issues, a cost evaluation in Pamplona (Artaso et al, 2002) which included elderly patients with psychogeriatric pathology. The cost of psychogeriatric patients¥care in the community was higher for those who attended a day centre, those in a more advanced state of their disease and those whose carers are overburdened. Gallego et al (2001), developed a questionnaire that evaluates the quality of life of non-professional carers of dependent persons.

Care and computers

Alexy (2000), University of Pennsylvania, suggests that homebound older adults and informal carers can gain valuable information, confidence and support by using computer resources. The author argues that computer technology can facilitate continuing education and refine nursing skills. Chambers & Connor (2002) developed software to offer information and support to home carers of the elderly and disabled.

Empowering carers. The Etorkintza Foundation

It is not easy to determine the effectiveness of interventions with carers (Sorensen et al, 2002). The burden and well-being of carers was assessed by Chappell & Reid (2002), who concluded: 'The finding that perceived social support is strongly related to well-being but unrelated to burden, reinforces the conceptual distinctiveness of the latter two concepts. This suggests that quality of life of carers could be improved even with burden in their lives and that the overwhelming focus in care giving research on burden should be supplemented with an emphasis on quality of life.'

To identify successful management strategies, Koch et al (2002) explored experiences by listening to the voices of 15 carers of dementia patients. They suggested that families can be prepared for a 'career' in caring and that early assessment and diagnosis is essential. The Etorkintza Foundation from the Basque Country (Spain) is planning the 'cuidamos al cuidador' project (CCP), a programme to support all carers. Its key element - a website - will provide efficiency. The basic programme elements are:

- telephone help-line
- e-mail help-line
- discussion forum
- articles and information
- specialised groups: support groups and learning abilities groups.

CCP staff: psychiatrist, psychotherapist, social worker, plus administrative support

The goal of the programme is to improve health and quality of life for carers and families. Public funding will be sought to offer the service free-of-charge.

Tricking the immune system

The chronic course of the hepatitis C virus

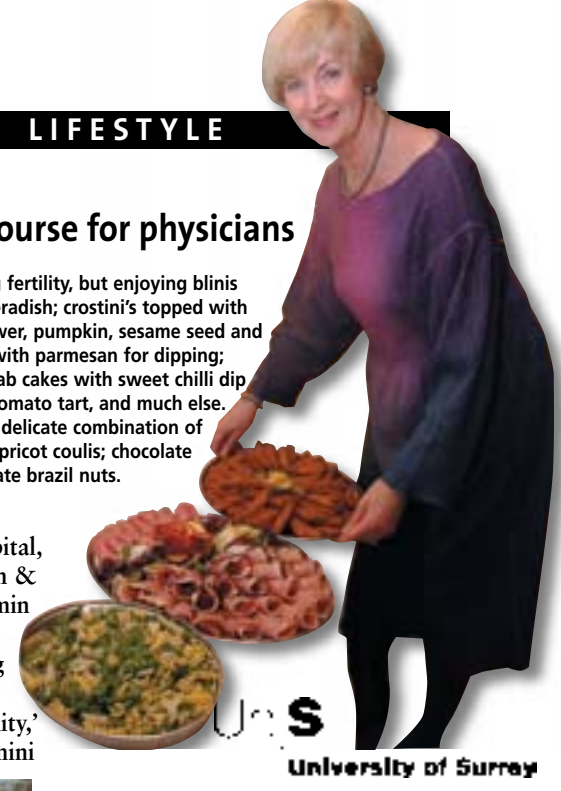
The Hepatitis C virus (HCV) is one of the most important causes of infectious inflammation of the liver. Although the acute infection is often not even noticed, 50-80% of those infected develop a chronic disease. A multi-centre, interdisciplinary working group, led by *Professor Peter Krammer* and *Dr Kerstin Herzer* of the German Cancer Research Centre, Heidelberg and *Dr Christine Falk* of the GSF Research Centre for Environment and Health, Neuherberg, have proved, for the first time, how the virus undermines the initially healthy immune system of these patients.

The body possesses NK cells that fight viral infections by detecting cells infected by a virus and killing them. Normally, these natural killer cells are abundant in the human liver. 'However, the Hepatitis C virus can switch off this first defence of the immune system,' said Prof. Krammer. The virus achieves this effect by setting off a cascade of molecular events in a liver cell, which eventually stop the activity of NK cells. In this, the major histocompatibility complex (MHC) class I molecules play a key role. These surface antigens allow the immune system to detect 'intruders' and control the activity of the NK cells. The Hepatitis C virus actively intervenes in the complex mechanism of the expression of these antigens and eventually prevents NK cell activity. Thus a virus can escape from the activity of this 'cell policing' and multiply undisturbed. This mechanism could be a reason why Hepatitis C infections often take a chronic course despite a functional immune system. 'We hope to develop specific strategies of prevention based on these findings, such as the development of a vaccine or a specific type of immune therapy,' Prof. Krammer added.

Around 350,000 people in Germany alone suffer chronic Hepatitis C, worldwide about 170 million are infected, and numbers are rising. The virus is transmitted via blood contact and the most common source of infection is the sharing of needles among intravenous drug users. This chronic disease can lead to cirrhosis of the liver and liver cancer after 20 - 40 years.

Food for fertility

A nutrition course for physicians



The fertility buffet: not just seeking fertility, but enjoying blinis topped with smoked salmon and horseradish; crostini's topped with pesto and roasted red peppers; sunflower, pumpkin, sesame seed and Brazil nut bread; extra virgin olive oil with parmesan for dipping; cold/cured meats; fish goujons, mini crab cakes with sweet chilli dip & calamari; goats cheese, thyme and tomato tart, and much else. Followed by fruit kebabs; dacquoise, a delicate combination of almond meringue with cream and an apricot coulis; chocolate mousse; cheeses & biscuits plus chocolate brazil nuts.

UK - Roasted red peppers, mini crab cakes and Brazil nuts - good stuff - and they can help to increase fertility, according to *Dr Margaret Rayman*, (far right) Director of the MSc Course in Nutritional Medicine, University of Surrey, who presented a 'fertility buffet' at the university in July. 'Oysters are by far the best source of zinc, but they are not included in this meal, as they are out of season,' she said, adding: 'Fatty fish is a very good source of n-3 fatty acids, which are important in the development of the foetus' brain and vision.'

A balanced diet rich in fruit and vegetables (at least five portions a day) and protein sources such as meat, poultry and fish, is necessary to optimise fertility. Meat is a good source of animal protein and important minerals such as iron and zinc, the latter being especially important for fertility. Alcohol and smoking should be avoided when aiming for conception. This applies to both men and women, as there is evidence that sperm damage through smoking can predispose to cancer in the offspring.

The buffet menu was selected by Vicky Chudleigh, State Registered Dietician at Addenbrookes Hospital, Cambridge. 'Sunflower, pumpkin & sesame seed bread contains vitamin E, claimed to be an aphrodisiac because of its effects on boosting circulation. It is also an antioxidant and needed for fertility,' she explained. 'Brazil nuts and mini

crab cakes are both excellent sources of selenium and required for sperm motility. Without adequate selenium, sperm tails kink and break off. Selenium also minimises the risk of miscarriages.'

Roasted red peppers, tomatoes, pesto (containing basil) and of course, chocolate mousse, were all selected for reputed aphrodisiac qualities. Spinach, with other dark green leafy vegetables, provide folate, needed to reduce the risk of neural tube defect in the developing baby. A cheese platter not only contains calcium and zinc, but also vitamin A, which aids the production of sex hormones. All are needed needed for healthy reproduction and libido, the nutritionist pointed out.

The fertility buffet is part of the 'Pregnancy, Infancy & Childbirth' module in the Nutritional Medicine course - aimed at doctors, who were then expected to complete an assignment on dietary advice for their patients.

For the past four years, the University of Surrey has offered a part-time post-graduate programme in Nutritional Medicine - the first university-level, evidence-based Masters' degree course in this subject in the UK. (The course is fully-booked until September 2004). The focus is on nutritional methods of disease prophylaxis and management, and has attracted a large number of high-quality students, including many from overseas.

As one of Britain's leading professional, scientific and technological universities, with a world class research profile and an excellent teaching and research reputation, is based in Guildford, Surrey, where it also owns and runs the Surrey Research Park, offering facilities for 80 companies that employ 2,500 staff.

Tempted by the caption? Keen to know why nutrition really matters? Contact: University of Surrey by e-mail: information@surrey.ac.uk

Travel Warning! Hepatitis A

Warning that hepatitis is rife in Turkey, ***Dr Yasar Bilgrin***, President of the Turkish-German Health Foundation (Geissen, Germany), has strongly recommended that travellers to this country to be vaccinated against hepatitis before their holidays begin.

A recently published study has found that 80% of Turkish families with six or more children have been infected by hepatitis A. Scientists in Ankara also discovered that 60%+ of smaller Turkish families, with less than five children, have been affected by hepatitis A, and about half of all Turkish children aged 10 have been infected by the jaundice pathogen. Berlin's Robert Koch-Institute (RKI) reports that about 35% of all hepatitis A infections contracted by German tourists derived from Turkey.

The hepatitis A virus is transmitted in countries with inadequate hygiene, via polluted water and food that has come into contact with that water, and the risk of contracting it is particularly high in main tourist destinations in the Mediterranean.

People infected excrete the pathogens via the stools. Only after two to six weeks do initial symptoms such as fever, exhaustion, lack of appetite and sickness appear. The disease is particularly insidious because those affected are highly contagious several days before the symptoms appear. Later on jaundice develops, the urine turns dark and the stools decolourise. In children, the onset of the disease is frequently asymptomatic (i.e. there are no recognisable symptoms), and Dr Bilgin warned that many Turkish children come into contact with hepatitis A without noticing it. Accordingly, they can infect others although their own infection cannot be detected. Since the hepatitis A pathogen is extremely resistant, infections may occur, for example, through the common use of sanitary facilities. Professor Wolfgang Jilg, hepatitis expert at the University of Regensburg, said the virus remains highly infectious for some time, even on door handles or in seawater.

Widespread epidemics occur time and again in Spain and Italy. A few years ago, serious outbreaks in Apuglia resulted in thousands of illnesses and many being hospitalised. According to a study at the University of Florence, those infected had eaten mussels, seafood, or fish. Professor Jilg said that, unlike hepatitis B, hepatitis is rarely fatal, but jaundice can lead to loss of work for weeks.

Vaccination is the only protection. Children aged over one year can be effectively and quickly safeguarded by a single injection, providing basic immunisation. After only 14 days those vaccinated show a large number of antibodies, so protection can be given shortly before a trip - and at any given interval to other vaccinations. After six months a second vaccination ensures protection for at least 10 years.

Professor Hans D Nothdurft, at Munich's Tropical Institute recommends all travellers to regions prone to hepatitis A outbreaks to be vaccinated. A map indicating hepatitis A outbreaks in the Mediterranean, information about this and other contagious diseases plus medical news services' health updates, are on the Institute's site: www.fit-for-travel.com/en/default.asp.

Sexual dysfunction

Healthy rise in sales

Sales of medications for male/female sexual dysfunction are rising and expected to grow from the $1.9 billion dollar level reached in 2002, according to a new report, 'US Sexual Dysfunction Medication Markets' by Linda Liu, Healthcare analyst at the marketing consultancy Frost & Sullivan.

However, the report suggests that, in this highly competitive field, the manufacturers of such products would be wise to focus on specific patients - whose needs would lead them to favour their products above others. (Among leading producers are Pfizer, Eli Lilly, GlaxoSmithKline, Bayer, and Procter & Gamble lead the pharmaceutical field, with small-specialised pharmaceutical companies such as NexMed, Macrochem, Biosante, and Cellegy also competing, the report adds).

Linda Liu points out that the erectile dysfunction market can be segmented, based on aetiology (vasculogenic, neurogenic, and psychogenic), severity of dysfunction (mild, moderate, severe, complete), age of onset, co-morbidities (diabetes, cardiovascular disease, depression), preferred medication formulation (oral, topical, nasal, sublingual, intracavernosal, intra-urethral etc.), populations that are contra-indicated for existing erectile dysfunction medication, frequency of desired sexual activity and other segments.

'By evaluating each market segments attractiveness and selecting one or more segments to enter, a company can create a very focused and differentiated strategy from competitors,' she adds. 'A company's product may help to define the focus. For example, many erectile dysfunction drugs work only for the vasculogenic aetiology of erectile dysfunction. Furthermore, companies can examine the sort of market they would like to pursue in light of their marketing capabilities. Pfizer is increasingly opting to pursue younger population groups with less severe forms of erectile dysfunction. This matches their capabilities since Pfizer clearly has a broad market reach and strong branding competencies, which are likely to reach this diverse population.

'Other companies that do not have a similar market reach may opt to be more focused in targeting. For example, small-specialised pharmaceutical companies are examining niche population groups that were not addressed by large companies such as Pfizer. Over six million men who are potential erectile dysfunction patients are using nitrates for cardiovascular disease, which is contra-indicated for use with Viagra and most likely other phosphodiesterase inhibitors. Targeting this group and their prescribing physicians can be a lucrative market for a niche player. Other niche populations include potential erectile dysfunction patients with a neurogenic aetiology, non 5-phosphodiesterase responders, patients with severe erectile dysfunction that may benefit from synergistic medications, patients seeking convenient formulations that are non-systemic and cost-conscious patients.'

The author points out that, in the male hypogonadism segment, Androgel has positioned itself as the solution for low testosterone, and has geared advertising towards educating males on normal testosterone levels. The firm's slogan: 'Could you or a man you know have low testosterone?'

'Procter & Gamble is expected to assume a similar position with Intrinsa,' the author adds. This is a testosterone patch for women, due to be launched in 2005.

Report details and purchase: http://healthcare.frost.com

Sourcing: BARCODES

A new division has been set up by Computer Imprintable Label Systems (CILS), of Worthing, Sussex, to produce durable barcode labels for hospitals and laboratories. The new Barcode Bureau Division provides expertise in all barcode fields and symbologies, including high density Code 128 for bar coding of microplates, the firm reports. 'CILS Bar Code Bureau Service is capable of handling even the most complex sample and patient ID variable data fields. CILS prints and verifies each label individually, maximising first time readability and eliminating wastage.

Bar coding is now available on the full range of CILS labels substrates - which are resistant to extreme temperatures (-1960 to +4000C), cryo-storage, liquid nitrogen, autoclaving, sterilisation, long term storage, chemicals, solvents and other laboratory environments. They will stick to difficult surfaces including tubes, vials, slides, petri dishes, microplates and other general labware,' the firm adds.

Details: labinfo@cils-labels.com.

Glucose monitoring licence

A worldwide license for SonoPrep, '... a non-invasive ultrasound-mediated skin permeation technology that enables transdermal diagnosis and drug delivery', has been granted to Bayer Healthcare by Sontra Medical Corporation, for the sum of $1.5 million.

The two firms report that they also intend to jointly develop a continuous non-invasive glucose monitor, incorporating ultrasonic skin permeation and Sontra's biosensor technology.

Sontra's products under development include the Symphony Diabetes Management System for continuous non-invasive glucose monitoring; a rapid onset (under 5 minutes) topical anaesthetic delivery system; a skin preparation system to improve electrophysiology tests and the use of SonoPrep for the transdermal delivery of large molecule drugs and biopharmaceuticals.

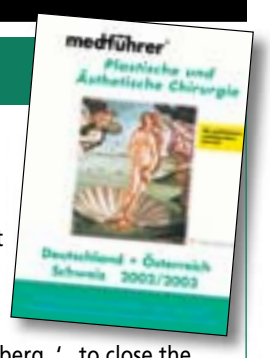
15 million hygiene tests

UK - Biotrace International produced its 15 millionth Clean-Trace rapid surface hygiene test - in time for the company's 15th anniversary. Founded in 1988, the firm, which specialises in microbiology and life science products, now has three direct sales offices, Biotrace Fred Baker Ltd, Biotrace Inc and Biotrace SA, as well as a network of other distributors.

Easy to operate, Clean-Trace, is used with the firm's Unilite luminometers to quickly check for the presence of adenosine triphosphate (ATP), a chemical found in all living cells. Even minute traces found on an already cleaned surface indicate it is still contaminated.

The firm also produces Pro-tect, a rapid test based on colour change. This is used to detect protein residue on surgical instruments in the post-washing and pre-sterilisation phase, the firm adds.

Plastic surgery manual



Germany - With 1,500 registered plastic surgeons, this country recorded 800,000 aesthetic surgery procedures in 1999 - an increase of almost 600,000 operations in ten years. Naturally, in the past 4 years, this figure has increased dramatically again. Reasons for the rise vary, but one suggests that increasing demand means increasing supply. But who is doing the supplying - and of what?

'Medfuehrer Plastic and Aesthetic Surgery' is a reference manual published by Medfuehrer GmbH, Heidelberg, '...to close the information gap between hospitals, doctors and patients,' the firm reports. Presenting information on the location of treatment centres, their managing doctors, staff, equipment and surgical experience, services, and quality assurance etc. and with illustrations on various diagnoses and surgical techniques, the manual can help to locate the most competent experts, the firm points out.

Scientific advisers for the manual included lecturers Dr Klaus Exner and Professors Biemer and Muehlbauer, plus members of the German Association for Plastic Surgery. Phone: +49 (0) 1805 / 63 33 83

Kodak and Siemens agree on global sales

Eastman Kodak Company (EKC) and Siemens Medical Solutions (SMS) have expanded their regional agreements - under which Siemens' sales force sell medical imaging systems from Kodak's Health Imaging Group - to include a new, three-year global agreement. The EKC products involved are computed radiography (CR) and digital laser printing systems. '*Kodak DirectView* CR systems and *Kodak DryView* laser imaging systems are among the industry's most innovative imaging systems for radiology,' the firms point out. 'Kodak CR systems enable radiologists to capture and view digital x-ray images in minutes, while Kodak laser imagers produce digital radiographic image files.'

Original equipment manufacturer (OEM) agreements '...serve as an important source for sales of Kodak products - most often equipment - from Kodak's Health Imaging Group', the firm points out. 'For example, when Siemens sells a CT or an MRI unit to a customer, the customer may also want to purchase a laser imaging or computed radiography system, which Siemens does not manufacture. Siemens would then order the system from Kodak to meet the customer's specific requirements and fulfil the order.'

Siemens has already begun selling Kodak medical imaging products in the US, Western Europe and India, with worldwide coverage to operate by the end of 2003.

ISO 13485 for US devices

The Association for the Advancement of Medical Instrumentation (AAMI) is close to adopting the latest version of ISO 13485 as the USA's national quality management system (QMS) standard for devices. The standard - endorsed by the FDA and other international regulatory bodies, will shift regulatory focus back to meeting customer requirements, continuous quality assessments and document maintenance.

The FDA has worked with AAMI and the American National Standards Institute (ANSI) to draft the US version of the standard. Entitled ANSI/AAMI/ISO 13485: 2003 and based on ISO 9001, the document is due for public release in August.

There are three key amendments:

The draft does not include a provision under ISO 9001 requiring device manufacturers to meet customer satisfaction needs.

The standard requires that device manufacturers continually assess their QMS at planned intervals to ensure continued suitability and adequacy.

Unlike ISO 9001, ISO 13485 expects device manufacturers to maintain a separate file for each device type and model.

Source: FDA News. Devices & Diagnostics Letter. Subscriptions: phone +1 (703) 538-7600 Fax +1 (703) 538-7676.

Smallpox drug development

USA - ViroPharma reports that studies at the Centres for Disease Control and Prevention, Atlanta, have shown that several small molecule compounds, developed by the firm, are up to 200 times more potent in treating the smallpox (variola) virus than drugs derived from Cidofovir. In partnership with the US Army Medical Research Institute of Infectious Diseases the compounds will be tested in lab tissues infected with the virus.

Patent for immunosuppressant

A US patent has been granted to Isotechnika, covering the firm's immunosuppressive compound ISA247, being developed to treat auto-immune diseases and prevent organ transplant rejection. This adds to patents already granted in Australia, Canada and New Zealand. Phase II studies of the calcineurin compound have shown that it is '...considerably more potent and less toxic than other drugs in this class,' says the firm, which is working on the compound with Roche.

Multi-channel leak detection

Replacing multiple stand-alone instruments, the Uson Qualitek 6000 is a multi-channel, modular leak detection system that is fully automatic, increasing speed and throughput, the manufacturer reports. Along with the parallel testing of similar components '... asynchronous testing of different items, or different tests on the same item can be performed with no need to connect all test components before multi-channel testing. Operators can work independently, even in different plant areas, performing different tests.'

The simple, password protected menus are easy to set-up and use, and a 'crisp' graphical display reduces operator error by producing 'straightforward, non-subjective results', the firm points out.

'The modular design allows use as a small, independent test system or for full integration into a completely automatic station. Connectivity includes serial ports permitting data transfer to a printer/computer, and remote control via a PLC is also possible,' Uson reports, adding that it offers a system design, installation and commissioning service. Systems of all complexities can be customised to meet users' needs, which, for example, may incorporate interlocking guards, data capture, SPC software and analysis, automatic clamping, sealing and stamping. Details: www.uson.com

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Congratulations Rostislav and Lucie Kuklik!

It was a hot summer wedding for Lucie and Rostislav - a journalist working for the Prague Tribune, and EUROPEAN HOSPITAL's special correspondent in the Czech Republic.
So ... best wishes for the future from our EH team worldwide!

GLOBAL EVENTS 2003

AUGUST

29-31 Rome, Italy
International Symposium on Atopic Dermatitis
Details: giannett@unimore.it/ Or: giro@idi.it.

SEPTEMBER

9 London, UK
4th National Conference on Falls and Postural Stability
CME and PGEA accredited. Covering bone health, care homes, etc. Details: hmc@hamptonmedical.com

11-13 Toronto, Canada
The 3rd Princess Margaret Hospital Conference on New Developments in Cancer Management
Covering common and less common malignancies, plus new drugs, R&D, new experimental programmes and advances in supportive care. There will also be a special nursing oriented symposium. Details: h.drew@imedex.com

12-14 Paris, France
French Society of Aesthetic Medicine, 24th Congress of Aesthetic Medicine and Dermatological Surgery
Details: euromedicom@aol.com.

18-21 Berlin, Germany
XXIV Congress International Society of Dermatologic Surgery
E-mail: info@isdsworld.com.

20-23
32nd EDTNA/ERCA Conference - nephro dialysis.
Details: edtna_erca@compuserve.com

27-1 Oct Vienna, Austria
Pulmonary Medicine conference

28-1 Oct. Amsterdam, The Netherlands
9th congress of the European confederation of medical mycology
Details: www.ecmm-tifi2003.org

30-3 Vienna, Austria
ESC Congress

OCTOBER

Barcelona, Spain
12th Congress of the European Academy of Dermatology and Venereology
Details: www.eadv.org

Oct 1-4 The Netherlands
International Conference on Applied Genomics
Expected interaction between researchers and clinicians on the (future) role of translational genomics, as well as in daily practice. Updates on relevant disciplines of biology, informatics and clinical medicine, including pathology, molecular biology, cell biology, genomics research, cytogenetics, microscopic imaging, bio-informatics, pharmacology, drug development, and medical, surgical and radiation oncology. 'The conference is likely to be of high educational value for those relatively unfamiliar with translational genomics and related matters,' say the organisers. Details: nve@convenience-cm.nl

5-9 Prague, Czech Republic
Neurology & Neurosurgery conference
Details: info@conference.cz

6-8 UAE
11th Surgical Conference, UAE
Organised by the Surgical Advisory Committee, UAE with participation of The Royal College of Physicians and Surgeons, Glasgow, UK
Details: 11thsurgicalconf@uaeu.ac.ae

16-17 London, UK
eHealth 2003: Implementing the Change
Offering sessions on management and leadership, global perspectives on innovation and best practice in eHealth with opportunities to examine national and international approaches to change in health policy and practice. Contact: j.sidhu@hgluk.com

19-22 Prague, Czech Republic
Europediatrics

28-1 Nov
13th European Respiratory Society Annual Congress
Details: sophie.cretton@ersnet.org

29-30 Brussels, Belgium
EUCOMED - Risk Management and Quality Systems Workshop and 7th Technical Forum
Highlighting the impact for Members of the forthcoming withdrawal of EN 1441 (Risk Analysis), its replacement by ISO 14971 (Risk Management), and the impact and possible changes necessary to quality management systems arising from the application of EN ISO 14971 and EN ISO 13485:2003.
The Forum will provide an update on key regulatory issues such as MDD review, Pharma and Human Tissue Regulation.
Details: elsie.vancoillie@eucomed.be

29-2 Nov Austria
Oncology - 29th ESMO Congress
Details: chatrina@esmo.org

31-2 Nov Adelaide, Australia
International Paediatric Anaesthesia Conference
Details: info@fcconventions.com.au

NOVEMBER

3-4 London UK
RCR Breast Group - CME accredited meeting
Keynote speakers: Professors Giorgio Rizzatto and Christiane Kuhl. Coverage: breast MRI, sentinel node biopsy, breast radiology, breast ultrasound, oncoplastic breast surgery, and the Sloane project. Details: hmc@hamptonmedical.com

9 Malta
Radography
Academic meeting on cardiovascular imaging using MRI, NM, CT, ultrasound, digital angiography. Contact: srm_malta@hotmail.com

9-12 Malta
Fourth Congress of the International Federation of Infection Control
IFIC conferences have built a reputation of being truly multi-disciplinary events encouraging fruitful interactions between physicians, nurses and other infection control professionals. 'The goal is to translate current research into practice and arrive at a consensus on multi-national approaches to common infection control problems,' say the organisers. Contact: infection.control@gov.mt

DECEMBER

7-12 USA
Current Concepts in Emergency Care 24th annual conference
Workshop on 'Managing Cardiac Emergencies -Year 2003'.
Details mawayne@hotmail.com

9-11 UAE
International Genetics Congress 2003
Genetics: the global challenge - regional focus. Advances in community and preventive genetics. Organiser: Genetics and Development Research Priority Group, Faculty of Medicine and Health Sciences, UAE University Details: www.alain-genetics.com

13-16 Malta
European Committee of Radiographers and Radiotherapists
Details: srm_malta@hotmail.com

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