

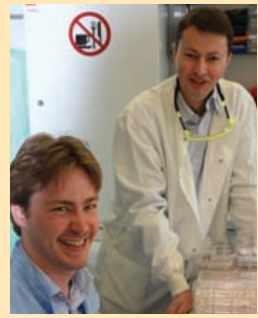
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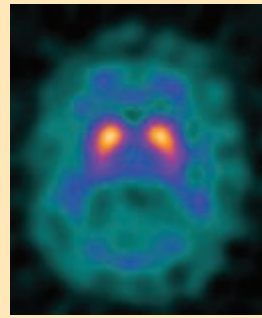
2 Competition

- WIN! Win!
- Your chance to own this 8 GB iPod touch
- Enter today!



6 Lab & Pharma

- IBM's portable POC test
- Diagnosing arthritis in advance
- Ovarian cancer detection success confirmed



Supplement: EH@ECR 2010

- Hospital Management Symposium
- Radiology and the law
- The impact of molecular imaging
- What's 'cloud' computing?

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- Scotland's winning tele-med project
- The IT Tsunami heaves in
- What's gained from trans-Europe IT?



VOL 19 ISSUE 1/10

February/March 2010

Haiti needs EH readers' help

Earthquakes are all bad... 2003 - Iran, 2005 - Pakistan, 2008 - China, 2010 - Haiti. Many experts consider the latter the worst.

Before the quake, 75% of Haitians were unemployed; 80% lived below the poverty line. Now there are about 1,000,000,000 refugees.

Among about 6,000 aid workers in Haiti, 600 are with the Red Cross. Partly based in a half-built hotel and tents around it, the aid workers face exhausting work - and dangers. People are hungry, some desperate and lawless.

The Red Cross workers, many volunteers, provide medical help, blankets, cooking equipment, soap, medical supplies, tents, and they also build - shelters, healthcare facilities and very vital flat-pack latrines, you name it. The rainy season begins soon. They need our help. See page 5



Paris: Job losses and discontent are inevitable

Public hospitals in Paris are to be re-organised and 3-4,000 employees among the 92,000 in total are expected to lose their jobs by 2012. Half of these will be health professionals (doctors/nurses), the other 50% office workers. From almost 40 hospitals today (576 clinical departments), the Assistance Publique-Hopitaux de Paris (AP-HP) will be restructured into 12 major health units. The AP-HP plans to save between 90-100 million annually through employee cuts, and to reach financial balance in 2012. According to Benoist Leclercq, director of AP-HP, patients should suffer no inconvenience from the reform. *Annick Chapoy reports from Paris*

Hospital department heads rally to express concern over the restructuring of public hospitals in the French capital



Hôpital Hôtel-Dieu

'Considering the rundown state of some hospital facilities in the city, modernising through the merging of some activities turns out to cost less than renovation,' according to **Benoist Leclercq**, who unveiled his plan in January. He explained, for example, that '...renovating the Hôtel-Dieu, one of the oldest hospitals in Paris, for it to meet

new standards would cost €280 million, while creating 450 extra hospital beds at Necker (recently modernised) would only cost €180 million.'

AP-HP has to adapt to a new environment - and must change. It should continue to combine excellence in healthcare and a proximity response expected by the

population. To meet new sanitary, economic and social challenges, the public hospitals' management requires rationalisation, especially when competition from the private sector is strong in terms of attractiveness for health professionals.

For reassurance, the Health ministry said that all these reforms, which triggered suspicion and anger among hospital unions, will be conducted after consulting representatives of hospital personnel, local politicians and patients. In Paris, the AP-HP is the main employer.

The new health units will regroup AP-HP hospitals that are geographically close. Their pooling will be mainly based on medical logic and aim to give patients coherent management and a complete course of care. It will enable shared administration

continued on page 2

Surgery: Follow it on Twitter then check yourself in

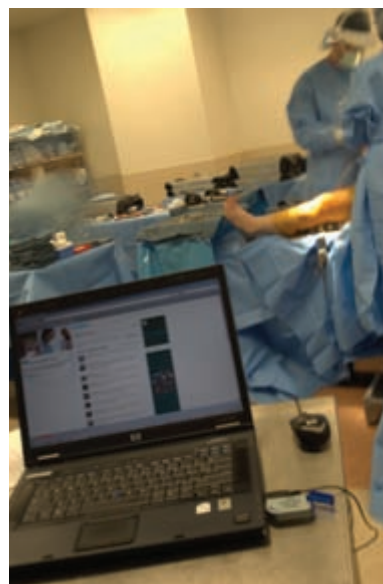
In January 2009, only about 60 US hospitals had a Twitter account. By this January there were 419.

Those figures originate from Ed Bennett, whose full-time job is to direct web and social media strategy for the University of Maryland Medical System. Beside this, he manages a website (<http://ebennett.org>) dedicated to the use of Twitter by hospitals and healthcare professionals.

Similar to the pattern of hospital website development over the past 20 years, only a very small percentage of US hospitals currently dedicate staff resources and budgets to tweet about themselves, as confirmed in a January 2010 survey of 100 large hospitals conducted by Greystone.Net, a Georgia firm that provides Internet and social media services for healthcare organisations.

The survey results also indicated that few of these hospitals had a formal social media marketing and communications plan, and these are very much fledgling efforts. 'Tweeting' is primarily used to provide super-summarised press release announcements, to alert citizens to

Hospitals in the USA are increasingly using Twitter to promote their healthcare services, writes *Kerry Heacox* of i.t. Communications



blood donation needs, to announce hospital events open to the public, and when there is a complaint or praise, to respond to it - fast.

In 2009, a handful of hospitals began to use Twitter to promote live surgeries. Broadcasts of surgical procedures using the Internet has proliferated with the almost universal availability of high-speed Internet, which makes streaming video possible. YouTube contains dozens of surgical procedures. There is even a website, www.ORlive.com, dedicated to live broadcasts and videos of surgeries performed throughout the world. It provides access to more *continued on page 2*

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Inside: EH@ECR 2010
24-page supplement



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For new EH registrations, tell us more about your work, so that we can plan future publications with your needs in mind. Please put a cross in the relevant boxes.

1. SPECIFY THE TYPE OF INSTITUTION IN WHICH YOU WORK

General hospital Outpatient clinic University hospital

Specialised hospital/type _____

Other institution (eg medical school) _____

2. YOUR JOB

Director of administration Chief medical director Technical director

Chief of medical department/type _____

Medical practitioner/type _____

Other/department _____

3. HOW MANY BEDS DOES YOUR HOSPITAL PROVIDE

Up to 150 151-500 501-1000 more than 1000

None, (not a hospital/clinic)

4. WHAT SUBJECTS INTEREST YOU IN YOUR WORK?

Surgical innovations/surgical equipment Radiology, imaging/high tech advances

Clinical research/treatments/equipment Intensive Care Units/management/equipment

Ambulance and rescue equipment Pharmaceutical news

Physiotherapy updates/equipment Speech therapy/aids

Nursing: new aids/techniques Laboratory equipment, refrigeration, etc.

Hospital furnishings: beds, lights, etc. Hospital clothing and protective wear

Hygiene & sterilisation Nutrition and kitchen supplies

Linens & laundry Waste management

Information technology & digital communications Hospital planning/logistics

Personnel/hospital administration/management Hospital Purchasing

Material Management Medical conferences/seminars

EU political updates

Other information requirements - please list _____

ESPECIALLY FOR DOCTORS:

Please complete the above questions and we would like you to answer the following additional questions by ticking yes or no or filling in the lines as appropriate.

What is your speciality? _____

In which department do you work? _____

Are you head of the department? Yes No

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, Theodor-Althoff-Str. 39, 45133 Essen, Germany, and for the mailing out of future issues and the EH electronic newsletter.

EH 1/10

COMPETITION

Your chance to win an 8 GB iPod touch

For your chance to win this special prize,
enter today!

The winner with this prize in his or her pocket will not only own an iPod but also a computer and a portable game player.

Using the 8 GB iPod touch, you could watch films and TV programmes on the vivid 3.5-inch display, or use the Multi-Touch interface to sort through music in Cover Flow, or simply tap on iTunes to browse and buy more.

The device stores up to 1,750 songs and provides up to 30 hours of audio playback time, and you could customise your musical experiences using its new Genius Mixes and Voice Control features.

iPod touch also holds up to 10 hours of video and provides up to 6 hours of video playback time.

Connectivity

Thanks to the built-in Wi-Fi, you will be able to surf the web, send e-mails (also with attachments) as well as obtain directions to your destination when travelling.

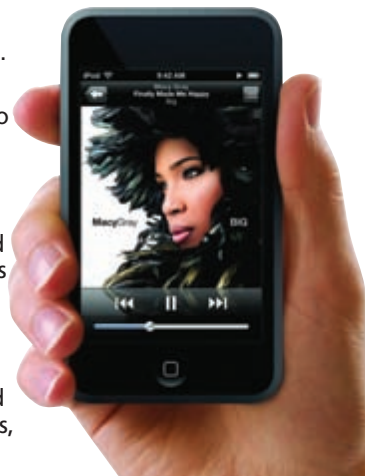
Games

Games for iPod touch are created to utilise the built-in technologies, e.g. accelerometer, Multi-Touch,

Wi-Fi and Bluetooth. So game: can be played alone or with others in multiplayer mode.

The accelerometer enables movement games, e.g. in racing games the iPod touch acts as a steering wheel and, in tap-and-tilt games, your own movements control the action.

(Thousands of games are ready to download from the App Store so future playing could prove endlessly challenging).



Sleek, smooth and small: The elegantly curved iPod touch, with optical glass front and polished stainless steel back, is 110 mm high, 61.8 mm wide, just 8.5 mm deep and only weighs 115 grams

Why enter?

It's so easy – and, since we launched our competitions some years ago, winning medical and healthcare workers throughout Europe have been delighted to receive the fine prizes we have awarded.

So, don't delay, enter the *European Hospital* competition today (why not right now!). Simply go to our website.

Good luck!

HOW TO ENTER

Simply fill in the Readers Survey form (left)
PLEASE NOTE:

- The closing date for entries to the EH 1/10 competition: 20 March 2010.
- Entries received after that date cannot be entered in the draw.
- The winning entry will be drawn from the correct answers.
- Only the winner will be contacted directly.
- The winner's name and location will be published in a future issue of *European Hospital*.
- NB: The prize is not exchangeable for cash.
- The usual competition rules apply.

The winner of the Philips LivingColors LED lamp featured in our competition in EH issue 6/09 and on our website, is:
Dr Joseph Eschbach, Acting-President of the Council of Administration, Centre Hospitalier de Mulhouse, France.



Paris: Job losses and discontent are inevitable

continued from page 1

(admissions, billing activities) and logistics (catering, maintenance). Pooling also means a sharing of technical tasks: imagery, biology, with the emergence of highly efficient technical platforms of national or even international stature.

The authorities insist that no hospital service is meant to disappear mechanically due to the reform. 'We must work at a better convergence of resources to meet the needs of the population,' they point out. 'The spreading of our competences is not always rational in terms of healthcare quality. Reaching a critical stage of activity guarantees high quality medical practice. At stake is the provision of excellence at all levels, whether we are talking about ambient care or extreme emergency.'

Every year, some €450 million is invested to maintain and renovate existing hospital facilities. 'Modern medicine cannot be practised with scattered facilities,' said Benoist Leclercq.

Joining thousands of other civil servants, who took to the streets last month to protest against the government's resolve to wreck the

public service, a number of hospital department heads rallied to express their concern; time is needed, they believe, to put together a responsible reform, based on medical considerations, rather than economic imperatives. 'This is no "existential" unrest, as was seen last year at France Telecom, stricken by a wave of suicides among employees,' insisted **Pr Olivier Lyon-Caen**, head of the neurology department at Pitié-Salpêtrière hospital, during a recent interview. 'However, pressure is constantly growing on our staff, especially nurses, and we are often on the verge of break-down. It is not unusual to see a nurse alone and in charge of 25 patients during her overnight duty.'

As opposed to other university hospitals in the country, AP-HP cannot count on the support of local politicians. Historically, the mayor of Paris and even the President or the Région Ile de France, never had much power, the AP-HP being directly handled by the Health ministry.

According to Pr Lyon-Caen, there would be other ways to save money, rather than cutting down on the workforce; for example, through better control of drug delivery. As opposed to the United Kingdom, where everything is

thoroughly controlled, France does not have any medical policy, as such. Hundreds of millions of euros could be saved annually if doctors started prescribing, for equivalent efficiency, a cheaper medicine.

In summation, Pr Lyon-Caen said: 'We are not against change, but we are against a lack of coherence, and lack of vision. Indeed, we could distribute our personnel differently in various hospitals only if those changes respond to medical considerations, and if the architectural layout of Parisian hospitals is rethought. They are indeed divided into small wards, where elsewhere healthcare can be efficiently delivered with fewer personnel in one big building concentrating everything. All of the provincial CHUs (university hospitals) underwent modernisation. Paris is the only city where basically no money was invested in construction over the last 30 years.'

The projected pooling of hospitals is raising fear particularly among health professionals involved in caring for AIDS patients. The Paris area cares for about 50% of these patients in France. Some sources close to AIDS specialists claim that the number of hospital beds dedicated to AIDS victims could drop by 50% in the planned reorganisation.

Surgery: Follow it on Twitter then check yourself in

continued from page 1

than 650 live and on-demand operations to over two million visitors and 80,000 registered annually. The firm reports that 55,000 hours of streaming video are accessed monthly.

Using Twitter for operations has generated much attention by the US news media, even at national level. But has it caught on and proliferated? Not yet.

In Texas, the Children's Medical Centre Dallas was the first children's hospital to tweet an operation. It did this to promote the importance of organ transplants and donations. A family whose father was donating a kidney to his son agreed that the simultaneous dual surgeries could be tweeted. On 18 May last year over 2,400 followers tuned in. The hospital considered this event a

Shiels, Director of Social Media and Digital Communication. 'Our objective was also to educate and reduce the apprehension that many people have about joint replacements.'

The surgery began at 07.30 with 1,700 followers (average: 930). By 11.00, 2,240 were watching. Aurora medical staff posted 250 tweets, and responded to 180 questions asked during the surgery. The tweets, the questions and answers were shared through re-tweets to an audience that was 75 times larger. Even Good Morning America, a popular national TV news programme, broadcast a news report about it.

Like his counterpart at Children's Medical Centre Dallas, Aurora

Health Care plans to select the types of surgery to be broadcast on Twitter very carefully. The objective is to attract patients to the hospital and to use Twitter judiciously to promote specific operations and the expertise of specific surgeons and physicians. The knee replacement broadcast prompted 20 people to fill in a form on the hospital's website. 14 of them had knee or hip replacements at the hospital.

Aurora does tweet five messages about distinct subjects daily – a great way to make people aware of what is going on at the hospitals and what services are offered, Jamey Shiels pointed out.

Twitter live surgery broadcasts

are clearly a marketing plus, but they don't have the staying power of online videos because an online Twitter search is not easy. The 523-bed St Luke's Hospital, in Cedar Rapids, Iowa, recognised this, and posted an entire Twitter broadcast of a hysterectomy (<http://www.stlukesr.org/documents/Surgery/twitter-surgery.pdf>).

Sarah Corriso, a St Luke's spokesperson, said this added about 600 new followers, and generated coverage from 400 media sources globally. 'A community hospital of our size would never have the financial means to purchase this kind of positive publicity,' she said. No further surgical broadcasts have been made, but the

hospital may do so in the future. In addition to Twitter, St. Luke's has a Facebook page and a YouTube channel to communicate with existing and future patients. In 2008, Cedar Rapids city experienced a devastating flood. Should that happen again, 'Twitter could be one more valuable tool to update employees and the community on pertinent information concerning the hospital,' she pointed out.

Meanwhile, Henry Ford Hospital, in Detroit – the first US hospital to broadcast a procedure on Twitter – continues to do so. In February, for example, it showed a robotic partial nephrectomy.

IT & Telemedicine reports:
EH pages 11-12



Title: "Survivor" by Christina Lissmann

success. Prior to the operation it had only 650 followers; the event increased this by 370%. People who viewed the procedure were invited to become organ donors, and many subsequently requested information packets. Although the event also created a lot of publicity and goodwill for the hospital, it has not broadcast any other operations on Twitter. 'Twitter must be used very judiciously and thoughtfully in the operation room. While our surgeons are open to the idea, and we will very likely use Twitter again from the operating room, we must justify this based on criteria pertaining to the right case, right family, right surgeon, and right cause,' explained media relations specialist Krystal Morris.

The decision to broadcast a robotic hysterectomy on Twitter by the 353-bed Sherman Hospital, in the northwest suburbs of Chicago, briefly yet dramatically increased its visibility in a very crowded and highly competitive healthcare market. The hospital used Twitter to promote its high-tech capabilities and educate future hysterectomy patients on what happens during robotic surgery. Since 2007, it had performed more than 150 robotic operations using the da Vinci Surgical System. Dr Raja Chatterji and Dr Humberto Lamoutte scrubbed up with a hospital spokeswoman, who reported the surgical procedure in a continuous stream of short messages and photographs showing the dissection of the fallopian tubes through to suturing the vaginal cuff.

In April 2009, Aurora Health Care, a 13 hospital organisation in eastern Wisconsin, tweeted one live bilateral knee replacement, but now plans to broadcast one procedure every three months, from April this year. 'We wanted to promote the fact that we have excellent orthopaedic surgeons, and the surgery we broadcast highlighted the use of custom knee implants, a new advancement in a procedure that a growing number of our aging baby boomers may someday need,' explained Jamey



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Healthcare sectors across different systems

The healthcare sector is one of the most scrutinized public sectors worldwide because the quality of the services closely impacts on the continuing health and life-or-death outcomes of us all. Healthcare is also a big player on the local economic scene because the investments it needs usually revolve around 8-9% of a developed country's gross domestic product (GDP) – apart, that is, from the USA.

All this, plus the fact that healthcare employs huge numbers, demonstrates that efforts to refinance (reduce funding), or keep healthcare costs as low as possible, is no easy task. Where there is money, there are also speculators, profiteers and very powerful interest groups, Rostislav Kuklik points out. Looking at the state of healthcare in the USA, and how healthcare sectors everywhere have been made so fragile, the days of 'managers', he reasons, are 'definitely over'

The notable increase in healthcare spending in most developed countries, particularly since the 1970s, significantly exceeded inflation trends and raised the very urgent issue of keeping healthcare cost containment, whilst also maintaining pre-set standards, and also providing some extra funds for research and development.

Healthcare politics represent the full spectrum of political activities aimed at improved the functioning of the entire system (government, public finance, GDP, etc.) by ensuring that all inhabitants are provided with basic (varying regionally) healthcare support. Thus, it's very likely that people are as fully employed as possible, so that the economy flourishes.

It is undeniable that WWII was a milestone in the development of modern healthcare systems. Across Europe there were various health systems, for example health insurance companies cooperating with local hospitals, out-patient settings and private practitioners. There were also certain government efforts to secure medical assistance for

those in need, but no complex solution was available because no functional (not to say that contemporary systems are fully functional) healthcare macro-system existed in any European or indeed other countries until that world war ended.

The fundamental momentum that eventually led to the establishment of real healthcare macro-systems arose due to new post-war social circumstances. Europeans and Americans were not only in poor health, but also new medical technologies emerged from military technologies, both stimulants for a modern pan-European or better global healthcare concept. Subsequently, at various levels, and in various countries, different healthcare systems developed. The whole spectrum of political, social and economic options generated four basic healthcare systems:

Liberal mixed - Used in the USA and several South American countries, this is based on the assumption that every individual is fully responsible for his/her

own health, and medical help is considered a paid service (as for products).

Beveridge - Following a report by British economist William Beveridge in 1942, this led to the UK's National Health Service (NHS), a system also used in Scandinavia and South Europe. Publicly funded, it provides medical help to all inhabitants, regardless of their financial situation.

Bismarck - In 1883, German Chancellor Otto von Bismarck introduced the Health Insurance Act. Based on mandatory health insurance paid regularly by individuals, this system was used in Western Europe, Japan, and the Czech Republic until around 1950, and after 1990.

- Typically used in the former Soviet Union, Cuba, and the Czech Republic from about 1950 to 1990, all medical settings (hospitals, ambulances, spas, etc.) were exclusively state-owned.

The new millennium

For many months the buzz words have been the 'economic crisis'

and 'recession'. Did no one really expect this? Did all those financial houses and international bankers truly think that sustainable development principles allow for permanent increases in companies' and banks' revenues? Did all those hospital directors, healthcare managers, private practitioners and specialists truly think that pouring money into the healthcare sector would never end? Last, but not least, did all those health insurance firms, with dozens of their agents, directors, and directors of directors think that the healthcare sector is a bottomless chest filled with gold?

No, they did not, but anyway they tried to squeeze the maximum out of the anonymous wallets of ordinary people. Nowadays, we see reform efforts everywhere: the United Kingdom in 2000, Slovakia in 2004, the Netherlands in 2006, the Czech Republic in 2008, Germany in 2009 and the USA in 2010. Additionally, there are hopes that patients will cherish their own health more, that hospitals will improve internal processes,

and practitioners will make prescriptions more effective.

The pure facts and financial figures are merciless. In the Czech Republic, the annual turnover in public healthcare insurance is around €77 million, another c. 15% is spent directly by patients (prescription costs, fees, etc.). This means a very good average -- 7% GDP -- is spent on healthcare. However, figures show that about 20% is expended unnecessarily on repeat examinations, healthcare misuse by patients, incorrect prescribing, etc.

Now, let's face the real extreme: US figures best demonstrate how imminent a future collapse may be.

In recently released 2009 figures, the US healthcare system consumed a breathtaking \$2.5 trillion; that's \$8,047 per person per annum. This represented more than 17% GDP (up from 16% in 2008) -- almost twice the average in European countries (the former 15 EU Member States averaged 9% GDP). The USA's health expenditures are increasing twice as fast as its GDP growth and, over the past decade, the average American family insurance payments provided by the employer increased from \$5,800 to \$13,400 per annum.

Should this trend continue for another decade, the average American family insurance will exceed \$27,000 per annum. No wonder 45 million Americans (15.7% of the population) have limited or no health insurance.

Is this really tenable management? It cannot be...

It seems quite likely that healthcare will prove very soon that the days of the so-called 'managers' are definitely over."

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S.O.S!

When disaster strikes in one particular Austrian State, specialist crisis intervention teams are quickly deployed to help the bereaved and distressed

Harrowing TV footage and news images from the recent earthquake in Haiti explicitly brought home the level of grief, confusion and loneliness of those left behind in such situations. Today, we know that disasters need special teams to respond to all kinds of needs, and some countries or areas have taken action to ensure help is on hand. When, for example, a house catches fire, a natural disaster strikes or a serious traffic accident occurs somewhere in Styria, Austria's second largest federal state, a crisis intervention team (short form: KIT) is likely to be the first to comfort the families of the victims.

The Styrian project was initiated 11 years ago when, in the wake of Austria's most devastating mining accident in Lassing, volunteers offered emotional support. Today, 360 team members – physicians, psychologists, social workers, members of the police and fire service – are on call to provide first aid for the bereaved or distressed all over Styria.

'Crisis intervention is not a form of therapy, it is above all meant to enable people to help themselves. After a traumatic event, most people do not need long-term psychosocial care but much rather support during the acute phase,'



Katharina Purtscher

explained **Dr Katharina Purtscher**, scientific director of the Styria crisis intervention team and director of the department for paediatric and adolescent psychiatry at the state psychiatric hospital Sigmund Freud in Graz, Austria. KIT members listen when sadness, despair or anger need to be vented – and they also do more. They help people to deal with all those seemingly mundane issues that arise after a catastrophe. Imagine some of the questions: *How do I organise a burial? Where do I order a coffin?* Additionally, relatives often ask KIT members to accompany them at the final farewell for their dead. 'Particularly when the dead person was severely injured, in a fire, for example, the relatives should not be left alone in this difficult hour. We talk to the mortician beforehand to see whether it is possible to cover disfigured parts of the body,' Dr Purtscher explained.

Two years ago, the KITS supported workers in a plant where an explosion had occurred. Two men died in this work-related accident; several were seriously injured. 'In such

cases the corpses have to be left on-site for the investigation team. But, it is important to cover the bodies to make it easier for the co-workers to pass by and out of respect for the dead. We also recommend that the leaders of the investigation teams offer their condolences to the relatives of the victims in person, or in writing, rather than over the phone. Another important issue is how management handles such a situation. They should call a meeting in order for the staff to receive first hand information, rather than second hand information from the media. During such a meeting management should also explain in which manner work will be resumed.'

When children are involved, crisis intervention becomes particularly difficult for the KITS. The ways children and adolescents cope with a catastrophe vary depending on age, but also on personality, social skills and the social network that carries – or fails – them. The younger the child the more important is the presence of a person they trust, most often mother or father, to offer a sense of security and comfort. In such cases, the support is closely coordinated with the adults. 'If, for example, the father of a family committed

suicide, we talk to the mother, help her choose the words she can use to explain to her four-year-old son that dad has died. Should she say right away that he killed himself, or should she wait for the child to ask how he died? Very often the surviving parent is so desperate that our goal is to stabilise him or her sufficiently to support the child.'

Older children and adolescents, on the other hand, often try to hide their sorrow in order not to place an additional burden on the parent. 'I will never forget an eight-year-old after the mining accident who said 'No, at home I won't cry because Mum already cries so often. And when she stops, I don't want to start,' Dr Purtscher recalled. In such cases it is better to offer the children direct support, rather than through the parents.

Be it children or adults, the aim of crisis intervention, she emphasises, is always to avoid that the traumatic event causes mental illness. 'We don't pretend that the catastrophe didn't happen, but we want to help people to integrate the event with their own history, so the catastrophe does not dominate their lives forever. We want traumatised people to be able to shape their own future.'

Dateline: Haiti. 12 January 2010. An ordinary day until, just before 5 p.m. another of the world's geological nightmares began. The ground shifted, everything shook, buildings crashed down, roads crumbled, power supply lines tore apart – and thousands upon thousands of people were left petrified, stunned, maimed, dead or buried alive.

The epicentre of the 7.0 Richter earthquake was near the town of Léogâne, about 16 miles west of

Mobile X-ray proves invaluable in Haiti

Just like the movies... Out of the worst nightmares heroes emerge to save the day. The difference? These are the real thing



Volunteers with Jack Williams and the CR-ITX 560 that consistently proved its worth for Haitians - and it's still down there

Haiti's capital, Port-au-Prince. At least 52 aftershocks, measuring 4.5 or more, occurred up to 24 January.

Soon after the news broke in time zones around the world, volunteer rescue and medical teams and others supplying medicines and food, faced the usual awesome disaster problem – logistics.

Kevin Hobert, CEO of Carestream Health, decided to donate a mobile X-ray machine, which arrived in Miami on that Friday night, then just sat there. This was the CR-ITX 560, which had proved its value after China's huge earthquake. Also on standby was Jack Williams, Carestream's service engineer.

It took Gregg Phillips, CEO at Autogov, who has links to Project Medishare from the University of Miami, days to get them in to Haiti, by having the military stop for a pickup at Homestead Air Reserve Base. 'Gregg and I flew down at 11:30 and landed in Haiti at about 8 o'clock Thursday night, almost one week after the earthquake. Project Medishare had a compound at the end of the runway. I was very impressed that they had set up four large tents, just a day after moving from a smaller location.'

Jack had travelled extensively in his 27 years with Kodak and Carestream Health, but said: 'It was quite something to walk into the tents and see all the patients laying on cots, babies through to people who were ninety-some years old. The doctors, nurses and support teams were all volunteers, all just going and doing what they could. And the Haitians are tough people – they didn't complain. It was beyond words what they were experiencing.'

Gregg Phillips, who had been involved in the aftermath of Katrina and the

Tsunami in Asia, pointed out that this disaster was different. 'With flood, you have casualties, but a lot of people unfortunately are washed out into the sea or in the water. They don't have as much physical damage from those kinds of events. It's more property damage.'

On Friday morning at 7 a.m., they set up the mobile X-ray unit, but a shortage of doctors found Jack and Gregg guiding patients through examinations, fortuitously helped by Nick, a Creole-speaking technician.

'The benefit was that this is a battery powered mobile computed radiology X-ray model. What we

do is scan on reusable plates; we expose the plate and stick it in our scanner, which reads it and also erases it, and within one minute of taking the X-ray, the doctors have these pictures up on our monitor. The benefit was that the doctors could see what they had immediately and that's when they would make their decision – could they do anything with the patient and if they could, they would move them over to the next table, set the break, and either schedule them for surgeries or put them on a list to be transported out if the break was so bad that they did not have the capability to do anything at that location.'

At midnight on that first day, with 50 patients seen and 125 images gained, Jack and Gregg crashed out on cots in the rows under the tents.

The next day at 7 a.m. there were more doctors, who guided Jack on the images they needed through to 1 a.m. the next morning, working side-by-side to beat the backlog of patients, some lying injured there for a week – and with new patients arriving constantly. Volunteers came, volunteers went, most from the US, and Haitians volunteers, too. Once, briefly, came some Swiss; French ones worked for several days. The US army helped move patients in the cots.

And so the workload and uncertainties continued.

Before Jack and the mobile X-ray came, the doctors could only feel and use their best judgment on how

to treat so many damaged patients. Often they could not tell what body part was broken. 'Our X-ray system really helped,' Jack said with satisfaction. 'They could now triage patients quicker; identify exactly where a break was and what had to be done, all in a matter of minutes.'

'By US standards, we would never think about working under the circumstances or environment that these doctors, nurses, and techs were in. And they were providing the best care that they could; it was something to see. I saw breaks on the monitor that made me cringe, yet these patients were lying there without hardly any moaning or groaning, and some had been there for up to five days because they did not have an X-ray unit.'

In the three days he was there, they X-rayed about 180 patients then, all but three had major bones broken. 'Only three people had sprains or something like that. We couldn't cope with all the numbers. If only we'd been able to get that unit down there quicker. At Carestream, we were ready right after the earthquake. I guess it was the US aid coordinating it and they had different priorities,' Jack said ruefully.

Before returning on the Sunday, a radiologist and two EMTs just happened to walk in off the street. 'The operation of the ITX-560 was quickly transitioned so they could continue to help those in need. The volunteers were just in Haiti. They were from Johnson City,

Tennessee,' said Jack, surprised by the good luck he felt. 'They came in and assisted for a day and a half. They really helped, because before, the doctors were basically reading their own X-rays.'

Finally, he said, 'I left the mobile X-ray there and other people were trained to use it. I don't know if they are still using it. I tried to call down there, but couldn't contact them. People move in and out. I am assuming that it is still working. I haven't gotten a phone call.'

'Jack Williams is a hero,' Gregg wrote to Carestream. 'Living and working with him during our trip to Haiti, I realized that I was sharing this life-altering experience with a guy whose heart is as big as America. He was caring, knowledgeable, and compassionate. We were pressed into service and asked to assist on procedures about which we knew nothing. Jack never once hesitated to support the doctors even though many of the cases were heartbreaking. Most difficult - the children suffering was tear jerking. Jack was able to offer special support for the little ones pulling tears from all. Doctors and nurses cried when I left, thanking me for bringing the machine and Jack to Port au Prince. Thank you again for all Carestream Health has done for the people of Haiti,' he added. 'Autogov is proud to have supported the effort. I am personally grateful for Jack.'

And Jack's comment? 'The heroes are the doctors, nurses and technicians who dropped everything to volunteer, under extreme circumstances. For me, it was not the most exciting job, but the most heart warming job that I've done. They were long days, but at the end of the day you felt good. I mean, we were down there helping people. It gives you a very good feeling inside. It was something just watching the other doctors and nurses. I just happened to be in the right place at the right time.'

Carestream Health message for European Hospital readers

If you would like to help Haiti, you can send a cheque made payable to: **The American Red Cross—Haiti Relief**. Carestream will match each dollar and direct the funds to long-term, rebuilding efforts that will go on for quite some time.



Send to:
Karen Sharrow
(MC: 01120) (Ref: EH 1/10)
Carestream Health Inc
150 Verona Street
Rochester
NY 14608, USA

Hitachi's 100th birthday!

A short summary of a long history: From a 5 h.p. motor to advanced nuclear medicine

It began with a five horsepower electric motor. In 1910, this motor, invented in Japan by **Namihei Odaira**, helped to generate electricity for the copper mines near Hitachi City. It also generated the beginning of an entrepreneurial success story that spanned 100 years, resulting in one of the world's leading industrial companies. Today, Hitachi employs about 400,000 people worldwide, guided by the firm's motto 'Inspire the next' for life services, IT, security, electronics, transportation and industrial products – as well as medical equipment.

As from the beginning, the spirit of the inventor and company's founder still influences the global philosophy of Hitachi: Create products that make daily life easier and more comfortable, the firm proudly explains. 'This vision hails back to the early 20th century, when Japan had just emerged from a feudal legacy. Odaira's dream was to help Japan develop its own technology. With Hitachi's first five horsepower electric motor in 1910, Odaira overcame the need to import electronic equipment, which led to the birth of Hitachi.'

Odaira's motor created a ripple effect and, despite the difficulty to find qualified engineers in post-feudal Japan, the young firm's products multiplied. Naming a few of the many early products manufactured, Hitachi pointed out that the first household fan was produced in 1916, and ten years later a similar model became its first electrical export shipped to the USA.

The step from a small fan to an electric locomotive was quickly taken. Eight

years later, Odaira and his team produced a 59-ton locomotive. Following this remarkable milestone, products for daily life, such as refrigerators and telephones, were launched.

After World War II, Hitachi developed rapidly nationwide, as well as internationally, becoming a leader in the provision of public infrastructure and power generation. During the 1970s, the company branched into hi-tech electronics by manufacturing IC memory chips and early computers, all of which made Hitachi what it is today.

Amongst the many highlights in its history, the foundation of the Hitachi Medical Corporation in 1949 was of great importance. As those of us working in healthcare well know, the company has since grown into a remarkable diagnostic medical imaging provider, with a portfolio ranging from MRT, X-ray, CT, ultrasound, nuclear medicine systems to medical information, archiving, check-up and accounting systems. 'But this is not an exhaustive list,' the firm points out. 'Additionally, in the area of medical technologies, Hitachi has innovative solutions on offer, such as Hitachi Real-time tissue elastography and Hitachi Real-time virtual sonography.'

Finally, the firm points out: 'Hitachi is a company at the top of technology – just like Namihei Odaira's motor was in Japan 100 years ago. A dream, enriched by passion and ingenuity, became reality.'



Namihei Odaira

NHS budgets and bariatric surgery

Weight-loss surgery causes a heavy UK controversy

Among the approximately one million obese people who meet the NICE criteria for treatment, about a quarter of a million want bariatric surgery, but only 4,300 NHS weight-loss operations were performed in 2009, *Brenda Marsh* reports.

The result is an estimated £7.2 million annual 'unnecessary' spend on obesity associated healthcare.

Thus professional anger is bubbling. In January, during a UK bariatric surgeons' conference at the Royal College of Surgeons of England (RCS), senior surgeons pointed out that, although there is incontestable evidence that surgery is cost-effective (within three years, as obesity associated costs are cut, they are recouped) and that it is the only proven successful method of treating the morbidly obese, admission for National Health Service (NHS) weight-loss surgery is 'inconsistent, unethical and completely dependent on geographical location'.

According to the 2009 NHS Constitution, morbidly obese patients (BMI of 40 or more) have the legal right to be assessed for weight loss surgery, under guidelines set out by the National Institute for Health and Clinical Excellence (NICE). However, the RCS discovered that although some Primary Care Trusts stick to the guidelines, others have been referring for surgery only patients with a BMI of 50-60 and suffering an obesity-related illness. The surgeons said there is

no clinical evidence to support this practice, and indeed, evidence suggests that these patients not only have less to gain from bariatric surgery, but they are also more likely to suffer serious complications.

Whilst in some areas NHS budgets have led the administrators to ignore professional guidelines by denying surgery for patients who meet the criteria, in others, the same type of patients must wait until either they become even more obese or develop a life-threatening illness such as diabetes or stroke.

The private sector

Many obese patients finally choose to pay £5,000-7,000 for bariatric surgery in the private sector. However, the surgeons pointed out that, whereas the Medical Defence Council used to receive about two medical negligence claims for private bariatric surgery in a year, in the last two years alone, 21 claims were lodged.

The surgeons called for the UK's Department of Health to invest in

a long term strategy to ensure that all patients have equal access to treatment delivered by experienced multi-disciplinary teams working in correctly equipped centres, which can provide a full specialist assessment, appropriate treatment and safe, long-term follow up and emergency re-admission.

Bariatric surgeon **Professor Mike Larvin**, who is also Director of Education at the RSC, said: 'NICE

To qualify for bariatric surgery on the NHS, some patients must even grow bigger!

guidelines are meant to signal the end of postcode lotteries, yet local commissioning groups are choosing not to deliver on obesity surgery. In many regions the threshold criteria are being raised to save money in the short term meaning patients are being denied life-saving and cost effective treatments and effectively encouraged to eat more in order to gain a more risky operation further down the line.'

Prior to the RCS conference, an anonymous survey of UK bariatric surgeons showed:

- About two thirds of the surgeons reported that patients who are eligible under NICE guidelines are refused surgery in their centres.
- Criteria for surgery vary dramatically depending on geographical location and within the same Strategic Health Authorities.
- Some centres are treating patients with referrals from multiple Primary Care Trusts (PCTs) with different eligibility criteria, meaning that patients with a BMI of 60+ are being refused surgery in the same hospitals that are treating patients with a BMI of 40 or less.
- Some Primary Care Trusts are refusing to commission any obesity surgery.

ONCOLOGY: SCREENING AND COLORECTAL CANCER PART 2

In Part 1, featured in European Hospital issue 6/09, we discussed colorectal cancer prevention and the evaluation of a screening programme. In Part 2 Johannes Blom MD PhD, of the Colorectal Surgery Division, CLINTEC, Karolinska Institute, at Karolinska University Hospital, Stockholm, describes the available and different screening tests

There are many different colorectal cancer screening tests suggested. The test offered in different screening programmes depends on a variety of factors, such as economy and the availability of endoscopy. Still, 'the best screening test is the test that is taken'

Faecal Occult Blood Test (FOBT)

FOBT tests the stool for invisible (occult) blood and has the advantages of being simple, safe and also inexpensive. Older FOBT (based on the guaiac-peroxidase reaction or tests that detect heme porphyrin) are frequently reimbursed by more advanced immunological tests (FITs) with higher sensitivity, but only with a marginal decrease in specificity (more false positives). Annual screening is recommended in the USA, although biennial screening is mostly adopted in Europe. A positive test must be followed by a diagnostic examination of the entire colon. Only larger lesions (>2 cm) bleed consistently and, consequently, small lesions can be missed.

Another pitfall is false positive tests after eating red meat and, therefore, dietary restrictions are often recommended for the more sensitive guaiac-based test. The sensitivity of a single FOBT is low (30-50%) but higher with repeated testing within a screening programme.

Despite a specificity of 95%, less than 20% of people in the target population with a positive test have colorectal cancer. Compliance in the older RCT's was in the range of 60-78%, but, unfortunately, is lower in national screening programmes so far.

Colonoscopy

The main advantages of colonoscopy are the direct visualisation of the colorectum and, more importantly, the possibility of obtaining tissue samples and removing adenomas during the procedure. This minimises the need of a secondary investigation and, hereby, there is a reduction in the indirect costs by decreasing the time needed away from work in order to participate. Moreover, colonoscopy is recommended as a screening test only every 10 years.

However, colonoscopy is relatively expensive, uncomfortable, and carries a small risk of severe complications, such as bleeding and perforation. Colonoscopy is most often used as 'gold standard' in the evaluation of new screening tests. Still, the accuracy of colonoscopy is dependent on both the experience of the endoscopist and the thoroughness of the bowel preparation. A sensitivity of 97% for cancer and 91% for polyps ≥ 1 cm has been reported. Unfortunately, compliance with colonoscopy screening is low (~30%).

Sigmoidoscopy

Sigmoidoscopy shares many of the benefits of colonoscopy, but only regarding the approximately 60 cm of the most aboral colorectum. It is easier to perform, routinely in less than 10 minutes, cheaper, and a rectal enema is often sufficient bowel preparation. Sigmoidoscopy is recommended as a screening instrument every five years due to the lower sensitivity (~75%). Pilot screening programmes have reported compliance in the wide range of 25-80%.

Double Contrast Barium Enema (DCBE)

DCBE is a radiological method when first, after bowel preparation, barium-containing contrast is administered into the rectum and, secondly, air is insufflated. DCBE is in the first place recommended as additional examination to sigmoidoscopy to cover the entire colon, but has also been proposed as a screening instrument every five years, at a lower cost and risk than colonoscopy but with lower sensitivity (~80%). In the case of a positive finding, a diagnostic endoscopy must still be performed. Another drawback is that DCBE is associated with relatively high doses of radiation.

Stool-Based DNA

The normal colorectal mucosa can develop into cancer by a series of genetic events, for example mutations in the K-ras gene resulting in an adenoma. While testing stool for occult blood is rather unspecific, the identification of tumour-specific DNA, stool-based DNA (SB-DNA), is an interesting concept, but not yet recommended as a screening test. The DNA is also shed continuously and not intermittently as seen with blood, and no dietary restrictions are needed. However, colorectal cancers are genetically heterogeneous and multiple DNA markers are needed. Despite promising pilot studies, the sensitivity and specificity were ~50% and ~95%, respectively, when screening in the average-risk population.

Capsule Endoscopy

At capsule endoscopy the participant swallows a small camera-containing

capsule. During the passage through the gastrointestinal tract, the capsule transmits data to a receiver attached to the participant's waist. Currently, capsule endoscopy is only used to examine the small bowel in the case of obscure gastro-intestinal bleeding, although it could hypothetically be used as a screening test, because colonic tumours can also be visualised. The diagnostic accuracy of colonic tumours needs to be developed when approximately every third positive case is false.

Virtual Colonoscopy

Computed Tomography Colonography (CTC) and Magnetic Resonance Colonography (MRC) are novel techniques where data from a spiral CT scanner or MR images are three-dimensionally reproduced to simulate the endoluminal views of colonoscopy; 'virtual colonoscopy'. Standard bowel preparation is most frequently used. The actual examination is rapid, well tolerated, and does not cause any major complications. Another positive aspect is the possibility of finding extracolonic pathology. The benefit of MRC, as compared to CTC, is that no ionising radiation is used, with the drawback that the patients cannot have metallic implants.

In small populations referred for diagnostic colonoscopy the sensitivity in virtual colonoscopy was >90% and the specificity ~75-99%. As with DCBE, people with positive findings still need a diagnostic follow-up endoscopy. Virtual colonoscopy is not yet recommended for screening outside research settings or for people other than those who cannot take conventional tests. There is a lack of clinical studies in the average-risk population and understanding of its costs.

Screening programmes across Europe

National colorectal cancer screening programmes starting from 50-60 years of age are currently running with FOBT in Finland, Latvia, United Kingdom and the Czech Republic and with colonoscopy in Germany, Poland and Italy. The reason colonoscopy has become accepted as a screening test in the average-risk population – even without randomised controlled trials demonstrating effectiveness, complications or costs – are probably the attractive colorectal cancer incidence reduction demonstrated of up to 75%. Also, colonoscopy has gained large mass media attention, with advocates such as the late Pope John Paul II and Senator Hillary Clinton.

Even with the demonstrated reduction in colorectal cancer mortality under ideal conditions in randomised controlled trials, the effectiveness of screening to reduce mortality in the average-risk population in routine screening must be evaluated continuously.

In screening with FOBT, the degree of mortality reduction depends on the compliance, screening frequency (annual or biennial), number of screening rounds the subjects participate in, and compliance with the diagnostic follow-up colonoscopy in case of a positive test. This is why, as opposed to opportunistic screening, rigid organisation with formal invitations, reminder systems and quality assurance are preferable.

There are still many questions unanswered, for example the effectiveness of screening colonoscopy and how individuals with screening detected adenomas are to be followed up. Future research co-operation is very welcome.



Johannes Blom

IBM's portable one-step POC diagnostic test

NEW

A one-step point-of-care quick, cheap and versatile diagnostic test that requires only the tiniest of samples, provides results within minutes, is portable, easy to use and has the potential to test for a wide range of conditions, from heart disease to bacterial infections, has been developed by scientists at IBM's Zurich Research Laboratory, Rüschlikon, Switzerland.

Based on a 1x5 cm microfluidic silicon chip, the test works by recognising antibodies. Once a patient's body begins to fight a disease, the scientists declare, the new test can identify it. Results are so fast and accurate that only a one microlitre sample, 50 times smaller than a tear drop, can be tested immediately, enabling swift action to be taken if necessary.

Made by IBM's experimental bioscientist Dr Emmanuel Delamarche and bionanotechnology engineer Luc Gervais, the chip contains capillary valves and pumps plus two types of antibodies - detection antibodies that fluoresce under light excitation, and capture antibodies. When a serum sample is placed on the chip, capillary force draws it into the microfluidic channel, where the detection antibodies bind to complementary analytes in the serum. The resulting complexes

then flow through the chip into the capture antibodies-patterned reaction chamber, where the fluorescence is measured with an external reader.

Capillary force is the tendency of a liquid to rise in narrow tubes or to be drawn into small openings, as when an entire paper towel absorbs water after only an edge is dipped in.

'This point-of-care test has achieved a treble,' said Dr Delamarche. 'It is portable, it is fast and it requires a minuscule sample. We are giving back precious minutes to doctors so they can make informed, accurate decisions exactly when they need them most'.

The microfluidic chip contains sets of micrometer wide channels where test sampled flow-through in a mere 15 seconds. Uniquely, the filling speed can be adjusted to several minutes when the chip needs more time to read a more complex disease marker. It can detect the inflammation and cardiac marker C-reactive protein at a concentration of only 10 nanograms per millilitre in less than three minutes. It can even detect concentrations lower than 1.0 nanogram per millilitre within 14 minutes. Its versatility is also noteworthy - it can deal with 16 different capture antibodies and

Report: David Loshak

analyse up to 16 different analytes.

'This microfluidic chip is the next step in the evolution of point-of-care devices', said Thierry Leclipteux, CEO of Coris BioConcept in Gembloux, Belgium, a biotechnology company developing rapid tests for diagnosis of enteric and respiratory pathogens.

IBM scientists designed the chip with a view to flexibility in both form and uses. Thanks to its size, it can be embedded in several types of form factors, depending on the application, including a credit card, a pen or something similar to a pregnancy test. Besides diagnosing diseases, the test is also flexible enough to test for chemical and bio-hazards.

The microfluidic chip consists of a five-stage microscopic path for liquids:

- The one microlitre sample is pipetted onto the chip and the capillary forces begin to take effect.
- These forces then push the sample through the series of meshes that prevent clogging and air bubbles from forming.
- The sample then passes into a region where microscopically



Zurich scientists Luc Gervais (left) and Emmanuel Delamarche

small amounts of the detection antibodies have been deposited. These have a fluorescent tag that recognise the disease marker and attach to it within the sample. Only 70 picolitres of these antibodies are used - a volume one million times smaller than a tear, making their dissolution in the passing sample extremely fast and efficient.

- After this comes the most crucial stage, the 'reaction chamber', measuring 30 micrometres in width and 20 micrometres in depth, roughly the diameter of a human hair. As in an everyday pregnancy test, the previously tagged disease marker is captured on the surface of the chamber. Under a focused beam of red light, the tagged disease markers can be seen using a portable sen-

sor device that contains a chip like those in digital cameras, but far more sensitive. Based on the amount of light detected, investigators can visually confirm the strength of the disease marker in the sample. That determines the next course of treatment.

- Finally, there is the capillary pump, which has a depth of 180 micrometres (almost a fifth of a millimetre). The pump contains a set of microstructures that pump the sample through the device at a regular flow rate, just like the human heart.

The Zurich scientists tested their ideas with academic and health-care partners and their research was supported by Switzerland's Innovation Promotion Agency KTI/CTI.

The new 'lab on a chip' could mark a major advance, not least because most current point-of-care devices need large sample sizes and off-chip processing, or can detect only a few markers.

'The main novelty is that it is an autonomous device that needs only five microlitres of sample to perform analysis,' says Luc Gervais. Also, it can draw the sample in without introducing air bubbles, a familiar problem in microfluidics.

'It is a powerful system because it is so sensitive and easy to use', adds Dr David Holmes, a microfluidics specialist at the School of Electronics and Computer Science, University of Southampton, UK. 'You can have sample preparation, sample labelling, sample analysis all done in the one chip, rather than moving from test tube to test tube.'

Test proves value for ovarian cancer detection

A new diagnostic blood test has been shown in women with a growth near the uterus to predict the presence of epithelial ovarian cancer more accurately and reliably than any other immunoassay.

The test combines two biomarkers, HE4 and CE125, developed by Abbott Diagnostics and Fujirebio Diagnostics, and is now available in Europe, having received its CE (Conformite Europeene) Mark, certifying that it meets EU health, safety and environmental requirements.

'This is an encouraging development not only for ovarian cancer patients but for all women with ovarian cysts because it can be difficult, with current methods, to distinguish malignant tumours from benign ones,' explained Fujirebio's chief scientific officer of diagnostics, Dr Olle Nilsson. 'The ability of this test to help predict whether a pelvic mass is benign or malignant is an important development for both patients and physicians,' added Michael Warmuth, Abbot's senior vice president (diagnostics).

Of about two million new cancer cases and 1.0 million cancer deaths in the 27 countries of the European Union annually, ovarian cancer accounts for some 41,000 new cases and 29,000 deaths. This is one of the world's highest incidence rates and, while it is declining in most of the EU's northern countries, it is rising in the south and east.

According to research led by Dr Richard Moore, associate professor in the Programme for Women's Oncology at Women and Infants' Hospital, Brown University, Providence, Rhode Island, USA, women with raised blood levels of Human Epididymis Protein 4 (HE4) may be more likely to have ovarian cancer. The CA125 protein alone has long been used as the gold standard for monitoring ovarian cancer.

'This disease is frequently hard to manage because symptoms are often recognised only in the late stages of the disease, when it is funda-



Above: Cancer cells of ovary
Left: Coloured CT scan of a slice through a woman's body, showing an enormous ovarian cancer tumour (top, green)

mentally incurable,' Dr Moore said. 'Our studies were directed at identifying those unique characteristics, the biomarkers, which might help us detect it earlier.'

Research showed HE4 to be the best single marker for Stage I disease. At that point, the probability of a cure is 90-95%. Unfortunately, 70-75% of ovarian cancers are diagnosed later, when the five-year survival rate may not exceed 50%.

In a pilot study, Moore's team evaluated nine potential biomarkers in 259 patients with pelvic mass. They measured levels of each biomarker within the women's blood and compared the results with biopsies of their tumours. HE4 was the most effective biomarker for detecting ovarian cancer, having 72.9% sensitivity and 95% specificity. When CA125 was added, sensitivity rose to 76.4%.

In 2008, a multicentre study using the CA125/HE4 combination successfully classified women into high and low risk groups. Of 531 participants, 129 were found to have epithelial ovarian cancer, six had other forms of ovarian cancer, 22 had low malignant potential ovarian tumours, and 22 had non-ovarian cancers. Most of the women (352) were found to have benign tumours. The new biomarker combination correctly classified 93.8 of those with epithelial ovarian cancer, the most lethal of gynaecological malignancies.

Rheumatoid arthritis

Blood samples indicate disease likelihood before symptoms arise

Sweden - A research team led by Solbritt Rantapää-Dahlqvist MD at Umea University Hospital has identified several cytokines, cytokine-related factors, and chemokines that significantly increase prior to the onset of the chronic auto-immune disease rheumatoid arthritis (RA). Their work confirms earlier studies that suggested that the risk of developing RA can be predicted and disease progression possibly prevented.

Complete findings of this study are published in the February issue of *Arthritis & Rheumatism*, a journal of the American College of Rheumatology.

The cause leading to RA development and progression is not fully understood, although various cells of the immune system and of synovial origin are suggested to be involved. Numerous cytokines are expressed and are functionally active in the synovial tissue once the disease has developed. The Umea team found that several of these cytokine levels spike as much as several years prior to the development of arthritic symptoms.

The early, accurate diagnosis of RA is crucial but, according to the American College of Rheumatology, RA can be difficult to diagnose because it may begin with only subtle symptoms, such as aching joints or early morning stiffness. Early on, the symptoms of many diseases, such as lupus, osteoarthritis and fibromyalgia, are the same as for RA, making diagnosis more difficult. According to studies, early treatment for RA patients makes them feel better sooner and they are more likely to lead active lives, as well as less likely to develop the joint damage that leads to joint replacement.

To determine whether cytokines, cytokine-related factors and chemokines are up-regulated prior to the development of RA, and which are involved, the team conducted a nested case-control study within the

Medical Biobank of Northern Sweden. Blood samples were analysed from 86 individuals before the appearance of symptoms of RA (pre-patients), from 69 of the pre-patients after the onset of RA, and from 256 matched control subjects (1:3 ratio). A consecutive time-dependent involvement of the immune system in disease development and progression was evaluated. The plasma levels of 30 cytokines, related factors, and chemokines were measured using a multiplex system. Individuals in whom RA subsequently developed were discriminated from control subjects mainly by the presence of Th1 cell-, Th2 cell-, and Treg cell-related cytokines, while chemokines, stromal cell-derived cytokines, and angiogenic-related markers separated patients after the development of RA from individuals before the onset of RA.

'We observed a clear relationship between cytokines related not only to Th1, Th2, and Treg cells but also to Th17 and the presence of anti-CCP antibodies, thereby supporting the concept that the immune system was already stimulated and disease was developing toward RA,' Dr Rantapää-Dahlqvist explained. Researchers found that blood samples obtained from individuals had elevated concentrations of pro-inflammatory cytokines, cytokine-related factors and chemokines, indicating immune system activation prior to any symptoms of joint involvement. 'Our findings present an opportunity for better prediction of the risk of developing RA and possibly preventing disease progression,' the researchers concluded.

* *Up-Regulation of Cytokines and Chemokines Predates the Onset of Rheumatoid Arthritis.* Heidi Kokkonen, Ingegerd Söderström, Joacim Rocklöv, Göran Hallmans, Kristina Lejon, and Solbritt Rantapää-Dahlqvist. *Arthritis & Rheumatism*; Pub. online: 28/10/10 (DOI: 10.1002/art.27186). Printed issue: 2/10.

Source: Dawn Peters

Medical errors and deaths

Patient safety strategies definitely improve outcome

Christian von Heymann, Professor of Anaesthesiology and Intensive Care Medicine at Charité University Medicine Berlin, is involved in general, transplantation, trauma and paediatric surgery. His scientific research focuses on peri-operative blood clotting and the improvement of patient safety. It is absolutely necessary to enhance patient safety, he told *Bettina Döbereiner* during their recent EH interview. 'Rough estimates of medical treatment errors and their consecutive costs exist. In 2000, for example, the Institute of Medicine estimated that about 98,000 deaths are caused annually by errors in medicine in USA. The Robert-Koch-Institute in Germany has assumed 38,000 evitable medical errors per year.'

Why and where do errors that lead to death occur? 'Unfortunately we can't deduce from data exactly where they happen. But we know that this data only refers to in-patient care. We can also say little about the mainly concerned medical disciplines,' Prof. von Heymann explained. 'However, we presume that particularly the department of anaesthesiology and intensive care department faces a high risk of treatment errors. The reason for a presumably higher incidence of medical errors has to be seen in the number of emergencies that require immediate decision-making, sometimes in minutes or seconds, and the high number of severe diseases in ICUs.'

Asked about the current focus to ensure better patient safety, the Prof. von Heymann said that a surgical safety checklist was issued in February to all departments involved in surgical care at Charité. 'In October 2008 we had already begun to think about it. A little later, a WHO research group paper demonstrated very well that peri-operative morbidity and mortality declines significantly when using a 'Surgical Safety Checklist'. The study proved that mortality could be significantly reduced from 1.5% to 0.8% and morbidity from 11%



Prof. Christian von Heymann

to 7%. Our checklist is based on the proposed WHO checklist, but adjusted according to the special conditions at the Charité.

'Our checklist covers one standard paper-size and, in order to distinguish it better from other papers, it has a special design and colour. From the very beginning the list comes with the patient, from hospital admission, through to surgery and back to the ward. All staff involved in patient treatment must consider the checklist and tick off questions that address each step of the treatment process. For example, the checklist requires verification of the patient's identity, what type of surgery he is expecting and so on. We ensured that working through this checklist only takes a few minutes. One of the most important points is to maintain the so-called team time-out that

takes place just before surgery. Staff involved in patient care right in the operating theatre introduce themselves to one another and discuss the specific conditions of the following surgical procedure, and they try to assess the particular risks and anticipate possible complications.'

Asked what other well-tested patient safety strategies are used at Charité, Prof. von Heymann said that the standard operation procedures (SOPs) were used. 'In our department we started with Anaesthesia Simulator based training. Both strategies help to manage critical situations during anaesthesia and thus improve patient safety. In addition to the mentioned activities we promote strategies that require learning from errors. In general, we still need better medical error management, and need to know more about errors in medicine and need more tools and instruments concerning prevention of errors. That's why, over two years ago, we implemented regularly held morbidity and mortality conferences (M&M Conferences). In these we discuss the treatment of certain patients, the medical errors that might have occurred and we try to develop concepts to avoid them. In 2002, our department introduced a critical incident reporting system (CIRS), which is available for all employees in our department and permits anonymous reporting. This enables a better detection of problem-areas and their elimination before accidents happen.

'In 2007, the German Society of Anaesthesiology and Intensive Care Medicine (DGAI) had put online the PaSOS, a nationwide Incident-Reporting-System. We noticed a very good acceptance of CIRS and PaSOS. I think it proved itself, because we register every day accesses, and the diversity of the reported problems demonstrate that there is a need to communicate.'

Report: Bettina Döbereiner

All-in-one Babylog VN500 for neonatal ventilation

The *Babylog VN500*, the new ventilation device from Dräger Medical for neonates and infants, combines important types of ventilation from conventional ventilation to High Frequency Oscillation, nasal CPAP and oxygen therapy in one medical device. In addition, 'The detachable control panel, with 17" touchscreen and rotary knob, offers extended possibilities of device control and lung function monitoring,' adds its manufacturer,

Invasive and non-invasive ventilation - To protect the upper airways of neonates, it is common practice to use uncuffed endotracheal (ET)-tubes. This often results in unpredictable ET-tube leakages, which complicate the adaptation of ventilation device to the spontaneous breathing of the small patient, Dräger explains. 'The Babylog VN500 provides automatic leakage compensation (ATC) to continuously adapt the trigger sensitivity to compen-



NEW

'Due to the premature lung of neonates, the requirements from ventilation devices are highly specialised. Ventilation often starts from the first minutes of life while the lung is still developing. Therefore, physicians must have the flexibility to continuously monitor and adapt the therapy. For pressure-controlled ventilation with continuous flow, the Babylog VN500 provides ventilation monitoring that includes the measurement of tidal and minute volumes,' Dräger points out. 'Via the Volume Guarantee (VG) option and Mandatory Minute Volume (MMV) mode, the device regularly verifies patient activity and maintains the support at a consistent level. If conventional ventilation is not successful, the physician can switch to High Frequency Oscillation (HFO): Delivering low tidal volumes at high frequencies can be more effective for certain patients to protect the premature lung during development. The Volume Guarantee (VG) option used during HFO automatically adapts the inspiratory pressure to the set high-frequency tidal volume.'

sate for ET-tube leakages. Alternatively, non-invasive ventilation can be performed in combination with the Dräger BabyFlow accessories.'

Touch screen operation - Aiming for at a glance monitoring and ease of use, the device has a default configuration for the touch screen; the user interface can be customised and help text is available to explain the different ventilation settings. Additionally the text provides hyperlinks to access further information. Graphic applications, such as the new *Smart Pulmonary View*, can support therapy decisions -- the application clearly represents ventilation parameters, such as lung compliance and resistance of the airways, in the form of a lung graphic.

Mobility - The internal batteries enable 30-minute use of the ventilator away from a central power supply; a P5500 power supply extends this up to 100 minutes.

'Combined with various solutions for central gas or independent operation, the Babylog VN500 is ready for intra-hospital transportations,' Dräger adds.

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NUTRITION AND HEALTH

Fat tissue

A big challenge for diagnosis and therapy

Severely obese patients with a body mass index (BMI) of more than 35 kg/m² present specific problems for physicians and nurses. In many hospitals they are automatically classified as high-risk patients because they require an increased level of attention in diagnosis, therapy and care.

For example, diagnostic imaging may not be possible with severely obese patients simply because the tubes of CT and MRI scanners cannot accommodate them, or ultrasound systems cannot provide clear images because the ultrasound beam does not penetrate the fatty tissue.

There are also many seemingly mundane issues connected to the treatment and care of severely obese patients: needles are too short, wards and operating theatres have to be equipped with extra sturdy beds and tables, and every patient transport requires additional staff.

In very obese patients fat tissues also reduce sensitivity to pain, so that many symptoms can be easily overlooked. Moreover anaesthesia is considered more risky and the risk of embolism is increased.

Since the doses of medication or anaesthetic are often related to body weight, precise weighing of the patient is crucial. Whilst many scales cannot handle severely obese people, the multifunction scales made by seca gmbh & co. kg., Hamburg/Germany, carry their weight. With a load bearing capacity of 300 kg, and particularly fine graduation, these scales are ideally suited to weigh patients either standing up, sitting or even lying down.

The scales are also equipped with wheels for easy movement from one patient to the next.



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CARDIOLOGY

The 21st Heart Report

In Germany, Austria and Switzerland mortality for certain heart diseases continues to fall with significant regional differences

The comparative Heart Report 2008 looks at selected ICD-10 diagnoses in Germany, Austria and Switzerland (DACH) -- ischaemic heart diseases, valve diseases, arrhythmia, heart failure and congenital malformations of the circulatory system. Morbidity and mortality of the diseases were analysed according to region, six different patient age groups and patient gender. The report's author is Austrian physician and former senior civil servant **Dr Ernst Bruckenberg**.

21st Heart Report results in brief: Between 1990 and 2008, mortality declined significantly, in Germany by 16.2%, in Switzerland by 13.4% and in Austria by 10.4%. For ischaemic heart diseases and congenital malformations a decrease in mortality was recorded in all three countries, while mortality from valve diseases increased. The death rates of the other heart diseases analysed did not develop uniformly. For

example, a remarkably strong increase in the death rate from heart failure was observed in Switzerland and from arrhythmia in Austria. The three countries show significant differences in morbidity and mortality of the selected heart diseases. In Switzerland, in 2007 in-patient morbidity of all heart diseases analysed was significantly lower than in Austria and Germany.

Future advances in cardiac surgery, e.g. valve repairs, increased durability of biological valve prostheses, arterial grafts for bypass surgery and the further development of hybrid operating theatres are expected to reduce mortality even further.

Future developments

Due to demographic shifts, heart surgery is increasingly becoming geriatric surgery. Thus, the number of in-patients suffering the heart diseases analysed for the Heart Report will rise over the next few decades. Cardiologists and



Ernst Bruckenberg

heart surgeons will intensify their cooperation to the benefit of these patients. Moreover, innovative imaging technology will enable the physician to perform ever less invasive diagnostic procedures.

Therapies for coronary diseases will also move towards less invasive procedures -- a trend that is, to some extent, caused by the anticipated shortage of stored blood due to demographic developments. Catheter-guided valve implantation will increasingly replace conventional heart valve surgery. Other catheter-guided techniques are also expected to gain ground. 'As so often with innovative developments, the medical technology industry will play a crucial role,' Prof. Bruckenberg explained.

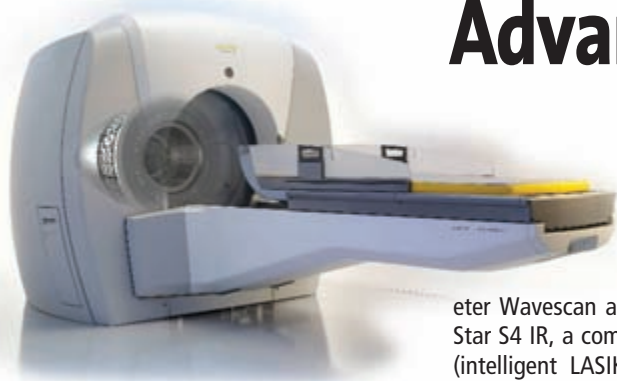
Competition will strengthen surgical centres that provide a comprehensive service portfolio. Demographic changes will continue to exacerbate the shortage of qualified medical and nursing staff already be observed today.

Report: Anja Behringer

Reports: Rostislav Kuklik

Advanced surgical procedures in the Czech Republic

The Leksell Gamma Knife (left and below right)



Ophthalmology – This January, when the 10th anniversary edition of 'Live Video Surgery' event was held at the Central Military Hospital (CMH) in Prague, dozens of Czech physicians had the chance to see 60 live eye operations. 'We wanted to show all the innovations in instrumentation and the new treatments available,' said Dr Jiri Pasta PhD, Head of the CMH Eye Clinic. As before, the most interesting operations were sent via videoconference to the CMH congress hall, where surgeons from all over the country had the chance to see it.'



Prague's Central Military Hospital (CMH)

This CMH event presents live eye surgery in the Czech Republic (CR) as well as the whole CEE region, with videoconference and live broadcasting safeguarded by technical experts from the academic association CESNET.

Among live surgery transmissions from CMH last December was the first European implantation of corneal ring implants using IntraLase femtosecond laser iFS 150, which took place during the 2nd Corneal International Congress in Prague.

The implantation of corneal rings is among the procedures to treat keratoconus, the degenerative eye disorder in which changes in the corneal structure cause thinning and the cornea to become more conical in shape. Creation of the corneal tunnel, where the ring is inserted, is currently being performed manually in a number of clinics. Using the femtosecond laser iFS 150 device is reported to make the procedure faster, more precise, and safer.

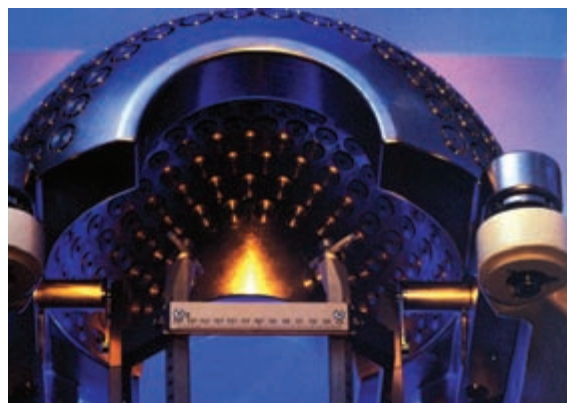
The CMH has acquired an iFS IntraLase 150, thus extending its range of medical services to correct eye defects. Femtolaser is part of two other compatible components - the aberrom-

eter Wavescan and Excimer laser VISX Star S4 IR, a combination called iLASIK (intelligent LASIK). The system vastly increases safety in performance, makes it possible to correct more clinically significant levels of dioptric defects and enables 'tailor made' eye surgery. Another use of the iFS IntraLase 150, in which it is considered the safest method, is for indications such as kerating implantation or corneal transplants. The device has received NASA, US Army and US Navy certifications.

Cardiology – Thanks to cardiac devices manufacturer Biotronik, two patients at high risk of heart failure received the new Evia pacemaker in January, also at CMH. Evia supports the natural conduction of the electric impulse from the atria to ventricles and is also a transmitter. 'We can consider it a dynamic AV interval optimization,' said internist Dr Libor Kamenik, a physician in the cardiology department. 'Patients with such equipment implanted can be monitored remotely over a wireless system that takes advantage of the internet and mobile network technologies. A portable unit, similar to a mobile phone, automatically transmits at regular intervals predefined information about the patient's health and status of the implanted device.' Thus the physician has real-time and on-line data about the treatment and any changes in cardiac rhythm. 'Physicians will thus acquire an active unrestricted access to a weblog of all arrhythmic events via secured website,' he added. 'No further cooperation is required from the patient. New series pacemakers offer much higher comfort, not only to the patient but also to the attending physicians. Thanks to its advanced technical features, it'll be feasible to minimize a necessity to recall the patient for an out-patient control. The pacemaker's lifetime, with fully reliable functioning, is estimated to be 15-17 years.

Leksell Gamma Knife – In late 2009, Hospital Na Homolce (Homolka) acquired a Leksell Gamma Knife (LGK). Used for radiation treatment of head and brain diseases – particularly tumours, cerebral vascular diseases or functional disorders of the brain leading to motor disorders or unbearable pain. New LGK type

Perfexion replaced the hospital's 17-year-old gamma knife – the only one in the CR. LGK Perfexion is now being tested for several months of trial operation. The device cost about €5 million, funded by the hospital's state-supported budget in relation to local hospital strategic investment policy approved by the Czech government at the end of 2009. 'From



the technological, hardware and software aspects, the new LGK Perfexion is at a higher level than the current device. It is faster, more comfortable

for both patients and hospital staff, and allows for extension of treatment options. In addition to brain and head irradiation, neck can be also exposed to it,' explained hospital director Dr Vladimir Dbaly MBA.

Gamma knife usage can, in many instances, replace risky open surgeries or may treat patients who are ineligible for any kind of surgical treatment. In about 20 to 30 percent gamma knife usage is combined with other treatment options. Especially if either the standalone operation did not lead to a complete cure or a combined procedure was considered safer for the patient. LGK Perfexion gamma-rays can be focused at sites that could be targeted before. 'The benefits are most important in cancer patients with metastatic brain disease. The older type of gamma

knife was entirely ineffective under the bad spatial placement of metastases, or more therapeutic interventions were needed to succeed partially at least,' said Dr Roman Liscak PhD, head physician of the stereotactic and radiation neurosurgery department. The new LGK Perfexion, he added, enables reduced radiation time due to modern technology. Time needed for full irradiation is shortened by 40 minutes (average). Since the LGK installation in 1990s, the stereotactic and radiation neurosurgery department has used it to treat 10,526 patients. 'Our gamma knife is one of the busiest machines in the world,' Dr Liscak exclaimed. 'Every year we performed about 800 operations, while the global average is 260.'

In terms of gamma knife treatment, Homolka is ranked among the global leaders for quality and experience. The hospital's first gamma knife was the first to be installed in all post-communist European countries -- Homolka acquired it through the national Charter 77 foundation monetary collection in 1992.

PAEDIATRICS Russia's surgery for TB of bones and joints

History is a philosophy teaching by examples, according to ancient historian Dionysius of Halicarnassus. Those wise words certainly ring true for a unique Russian clinic serving children with tuberculosis (TB) of the bones and joints
Olga Ostrovskaya reports



Aleksander Mushkin

Almost 100 years ago, Vera Perovskaja, a Maid of Honour in the imperial court, built a special house in a beautiful park and made it a hospital for poor, sick women and children.

She also worked there as a nurse. For their harsh century of wars, revolutions, city name changes (Petersburg-Petrograd-Leningrad-Petersburg), the surgical clinic for children with TB of the bones and joints struggled to develop. Today, although its walls have been put to the test of time, inside are highly qualified surgeons dedicated to helping TB patients aged from three months to 18 years. The clinic is now also now part of the Saint-Petersburg Federal Scientific Research Institute of Physiopulmonology.

According to the World Health Organisation (WHO) data, Russia is among 22 countries with a notable TB burden; the saddest part of this is the considerable prevalence of TB among children. Another problem is complications with the BCG-vaccine (every

newborn must have it on the second day of life) – about 300 annually, and every little TB patient is treated in Saint-Petersburg.

The history of TB bone/joint surgery has progressed through many stages – from the complete negation of TB surgical methods to the attempts to apply them anywhere and everywhere, thus eventually discrediting them. Up to the 20th century, TB bone/joint surgery basically meant amputations of the extremities. The weight of such treatment forced the pendulum towards conservative treatment: patients were offered years of life in plaster corsets or bed. The extent of damage was enormous: in the street, passing someone with a hump due to spinal TB was an everyday event. At that time, TB bones/joints surgery was called the surgery of complications and despair.

Half a century later came antibiotics. In addition, surgery as a TB therapy began to take a leading role. In 1961, the first considerably regenerative operations on children's spines were carried out at this Russian clinic. However, it was only in the early '90s that the general concept of surgery for

TB bones/joints in children was formulated: surgery should be focus not just on the total removal of a pathologically active condition but also to correct the orthopaedic complications and, as far as possible, to create favourable conditions for the high-level development of a surgical department.

Last year's analysis of the TB of bones/joints situation in Russia testifies to a 'weighting' of the structure of pathology at the expense of its rejuvenation. In 2000, 75% of all patients who arrived at the clinic were children up to seven years old -- and almost 50% of those were no more than three years old. Consequently the number of operations carried out increases annually – last year totalling over 200. Of these, 97% were successful.

The main point is a timely diagnosis. 'The search for new methods of diagnosis and treatments for the various pathologies of the skeleton remains our central concern,' said the clinic's lead surgeon Aleksander Mushkin. 'By all appearances the TB burden will be a grave problem for Russia for several years. That's why there's nothing else left for us to do but work more effectively.'



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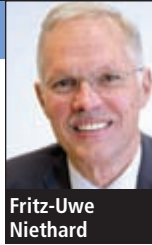
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ORTHOPAEDICS

For today's orthopaedic surgeons, endoprosthesis interventions are part of daily routine, and, for elderly patients in particular, the gentler, less damaging minimally invasive surgery (MIS) results in better outcomes, according to **Professor Fritz-Uwe Niethard**, Director of the Clinic for Orthopaedics and Accident and Emergency Surgery at Aachen University Hospital and Medical Director of the Ortho-MIT-Project*. 'In older people a number of circumstances complicate treatment -- to start with the multimorbidity issue,' he told *Karoline Laarmann* of European Hospital. 'But there are also local factors that play a part. With age, bones become softer and are therefore less suitable for certain types of implant. Muscle tautness also decreases, which is why the muscles as well as all other soft tissues need careful treatment to prevent lengthy rehabilitation. We must ensure that the stability of the entire care is restored promptly.'



Fritz-Uwe Niethard

of the many pieces of equipment would be a big improvement.'

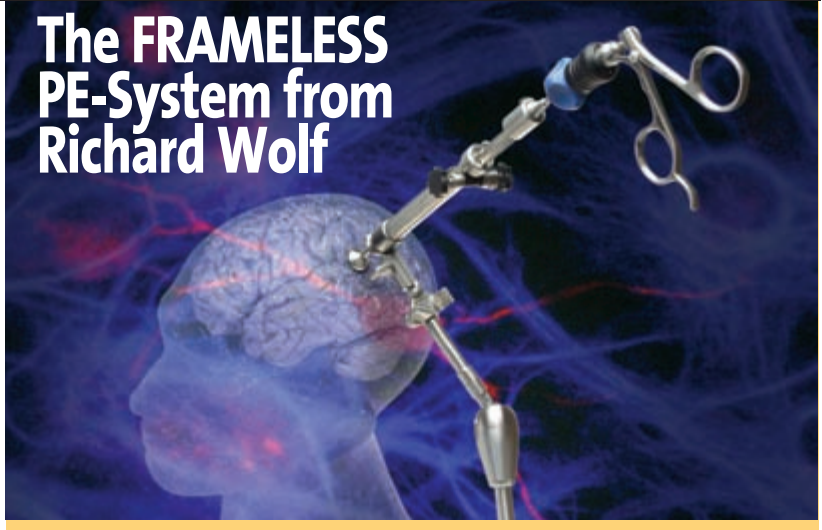
Knee - With the increase in MIS, prostheses are becoming smaller and smaller, and smaller prostheses mean smaller points of access, and therefore more navigation. However, the prostheses currently available for the knee joint do not deliver the same good, clinical results as those for hip joints. Prof. Niethard: 'We are now trying to transfer procedures from dental technology to knee endoprosthesis. Similar to the procedure used in fitting dental implants, this entails shaping a groove into the bone via a relatively small access point with a docked robot, and then fitting a specially prepared prosthesis.'

High-tech plus research for better MIS and better outcomes

MIS & navigation - Modern navigation systems are crucial for MIS, particularly in the spine where just a degree of deviation in instrument handling can severely damage nerves and vessels. An interaction between opto-electrical, robotic and imaging procedures aids surgical precision. 'Thanks to navigation we are now able to strengthen the vertebrae with just five small incisions. Initially, we pass a special CT scanner -- the robot-supported, flat-panel detector -- over the patient in the operating theatre. The 3-D CT spinal image generated in this way is then used for orientation during the entire surgical intervention. The positioning of instruments can be displayed via optical cameras or via electronic fields. The exact positioning is registered by markings on the instruments. This is more difficult in the case of the electronic field, because the many metal devices in the theatre can distort signals so the optical and electronic systems have to be connected to improve precision.'

ent imaging modalities in the theatre is an area of research within the Ortho-MIT-Project. 'That's why we are working on new technical procedures enabling us to match pre-operative CT data with ultrasound images taken during surgery. However, even more important for the functioning interaction between the different applications is the interface compatibility of the technology, Prof. Niethard emphasised. It is also an important aspect for the medical technology industry. 'The best technology is of no use if, for example, the navigation system does not communicate with the image converter.' Wouldn't it be possible to work with equipment from just one manufacturer across the hospital? 'This is something that can no longer be implemented and is far too expensive, which is why we have created internationally binding norms in the Ortho-MIT-Project to allow for the modular integration of the most different applications and components in a surgical workstation. Even just the ability to do without the clutter of cables resulting from individual input/output leads

Hip - Replacing hip endoprosthesis present a further problem, the professor explained. Intervention is necessary when the prosthetic material has become porous or infected over the years and needs replacing. However, the old cement embedded in the bones is hard to remove, and because finding its exact locations means lots of X-rays resulting in high radiation exposure. Ortho-MIT is working on a system that combines navigation and robotics to detect bone cement. After the generation of a 3-D image of the hip bone and acetabulum, a small robot (hairdryer-size) is interfaced with the navigation system and automatically starts milling out the cement. *The Ortho-MIT-Project under the leadership of the Aachen Orthopaedic University Clinic and the Helmholtz-Institute for Biomedical Technology at the RWTH Aachen University, links 32 hospital, research and industry partners. Central to the project are new technologies for MIS on the hip, knee and spine, for which the German Federal Ministry of Education and Research is providing about €12.9 million. Details: <http://www.orthomit.de/> *MIT = Minimal-Invasive Therapy



The FRAMELESS PE-System from Richard Wolf

Biopsies are often necessary to define the state and stage of head tumours and then to assess and plan further treatment options. This is delicate work, indeed. 'Intracranial excisions have so far mainly been carried out with the help of a stereotactic frame,' Richard Wolf GmbH explains. 'This procedure is very uncomfortable for the patient and quite time-consuming for the doctor and operating theatre staff.'

Based in Knittlingen, Germany, and with 1,400 highly qualified employees, seven subsidiaries and 137 regional offices worldwide, this precision engineering company

manufactures the FRAMELESS PE-System, which offers a universally usable biopsy system that makes it possible to take biopsies in connection with any neurosurgical navigation system, without the need for a stereotactic frame. 'Tumourous processes can be precisely accessed and the biopsy taken from the centre,' the firm explains. 'The surgeon has biopsy pliers and suction biopsy needles at his disposal for the excision. Special catheter guidance allows the insertion of a catheter for drainage or application of medication and chemotherapeutics.'

Details: www.richard-wolf.com

Sordina Moving with our times

Italian designers are so often world beating. This includes the country's medical equipment designers, who must ensure ergonomic functioning at the highest level, but who also manage to make things look so great.

At the end of the 19th century, the Italian firm Sordina worked closely with the Engineering Department of the prestigious University of Padua, and soon became one of the most important 'mechanical laboratories' in the area. Today, Sordina Spa, based in Saonara, specialises in the design, manufacture and sale of high-tech medical equipment, which

include superbly and ergonomically designed operating tables, sterilisers and intra-operative radiotherapy equipment.

'The company has always tried to draw the highest advantage from its century of experience and also from the contributions, abilities, specialisations and resources of its business partners,' Sordina points out. 'In this way, cooperation flows perfectly through the design process, the choice of suppliers, the final testing phase and delivery to customers. All these activities compound to generate customer satisfaction.'

After having successfully launched its MT System - operating tables engineered with interchangeable table tops -- Sordina recently presented a range of new products -- the ST Series of fixed table tops, which quickly became successful in Italy and abroad shortly after the launch.

The firm's most important product is the LIAC (Light IntraOperative Accelerator), a machine invented after carefully analysing the limits imposed by activities connected with intra-operative radiotherapy performed in a surgical environment. The LIAC uses the IORT technique (IntraOperative RadioTherapy), in which an electron beam is used to treat tissues affected by neoplastic processes that are exposed during surgery.

'The LIAC performs brilliantly in all intra-operative therapies, without lengthening the duration of normally short surgical operations, thanks to the rapid positioning and considerable volume of radiation,' Sordina explains. 'The particular and innovative characteristics of the LIAC - such as its small size, safety features and power settings of the electron beam - make it possible to add this machine to any operating room without altering existing structures in any way. Sordina is very proud of this versatile product.'

Full details: www.sordina.com
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15-18 March Barcelona, Spain

Combining the World of Health IT Conference & Exhibition and the European Commission's High Level eHealth Conference, the Barcelona event will present a range of expert views on many subjects, including the pros and cons of using the internet and Web 2.0 (social media) in healthcare, as well as highlighting European IT research projects.

Health 2.0 - Could Twitter and Facebook replace a physical doctor/patient consultation?

Unlike traditional websites, Web 2.0 applications allow people to interact and share experiences and knowledge. And, whereas traditional healthcare facilities give a patient access to one doctor, the internet, and especially Web 2.0 applications, open the door to a vast number of healthcare facilities, also presenting a chance to interact with qualified doctors and patients from, say, Greenland to Fiji.

Some argue that Health 2.0 could save costs. Twitter, perhaps, could enable doctors to provide instant answers to a patient and others following the discourse on a medical topic. Dedicated patient forums are already virtual spaces where you can read about other people's experiences and familiarise yourself with treatments and medical specialists.

Health 2.0 can potentially save money, bureaucracy and time. Just look at the number of online patient forums. The number of hospitals and specialist clinics offering online consultations are growing every day – great if you are ill on holiday and want to consult with your own doctor.

However, there are still downsides, such as data security, credibility of sources and privacy issues. Are you really speaking with an accredited medical doctor or hospital? Should one patient's personal experience be a guideline for everyone else? What about

preconditions that may not be included in an online forum?

Moderated by Miguel Cabrer, CEO & Founder of Medting.com, and speakers including Denise Silber, organizer of the Health 2.0 Conference in Paris, and Jen McCabe of NextHealth, the Health 2.0 conference session *How hospitals and Healthcare organizations can address Web 2.0: Is Healthcare ready for open access to information?* will discuss how clinical transformation can only occur through changes in processes and how web 2.0 applications can be a solution to transformation.

Delegates will learn the fundamentals of social networking; review the role of clinical transformation in improving healthcare understand some basic Web 2.0 concepts and technology, and witness some practical experiences of Web 2.0 social platforms for clinicians and patients.

Health-e-Child, MyHeart, Caalyx

Europeans unite for IT evolutions

The prospect of eHealth Week 2010 provokes reflection on the results of the European Commission's multi-million euros funding, and an assessment of some of the projects destined to shape the future of healthcare in Europe.

Health-e-Child - Delegates will be able to witness a new research platform at work. Researchers for the Health-e-Child project are developing software tools that



Ilias Iakovidis

can search and compare a vast range of structured and unstructured patient data, including genetic and clinical data, and images from CAT and MRI

scans and other records. The system helps to identify children in Europe with closely matched conditions. Doctors can then study how matching patients at other hospitals were treated and whether that treatment was successful, ultimately to improve the ability to choose the right path for their own patient greatly.

Currently, the system links databases of anonymous patient data from hospitals in Paris, Genoa, Rome and London, with plans to extend the network to 25 hospitals. The focus is on three complex paediatric diseases with at least partly unknown causes: heart diseases resulting from right ventricular overload, juvenile idiopathic arthritis and brain tumours.

Delegates will be invited to connect to the system using a USB key – which includes major authentication, data management and decision support facilities – and they can challenge the system to identify interesting similarities in cardiology and brain tumour patients. All samples and examinations are accompanied by simplified clinical explanations, allowing visitors to understand their findings quickly.

Caalyx - Funded with €1.85 million by the European Commission, in the *Complete Ambient Assisted Living*

Experiment (Caalyx) project, partners from Germany, Italy, Ireland, the UK and Portugal are collaborating to develop continuous monitoring, 24/7 emergency services, personalised care and easy-to-use technology for the elderly.

A prototype of a home monitoring system, a mobile roaming monitoring system and a caretaker centre has been produced. The mobile system can collect vital signs as well as detect falls. Data is transmitted to the caretaker centre where help can be organized. In the case of a medical emergency, the location of the elderly person can be tracked via a GPS. The technology is now to be integrated into a T-Shirt-like textile, to be easily accepted and worn by patients.

MyHeart - Intelligent textiles are also a focus of the MyHeart project: sensors are integrated into T-Shirts and even bed sheets for unobtrusive monitoring of vital signs, e.g. ECG, body weight and BP.

A textile vest is used for 15-minutes of measurements in the morning; the bed sheets are used to analyze the respiration pattern of patients when sleeping. Electrodes integrated into the vest cloth can be used to record ECG and chest impedance. The ECG helps to calculate heart frequency variability. 'This new parameter is of considerable interest in the monitoring of heart failure patients. In some patients, at least, it might help to detect

critical episodes far earlier than conventional parameters like body weight,' explained Professor Christian Zugck, of the Department of Internal Medicine, Heidelberg University, Germany. This would lead to fewer hospital admissions, he added.

With €16 million funding from the European Commission, 10 EU Member States are cooperating on this project.

Driving the transformation of healthcare

Along with these projects, important research is also taking place on artificial organs and disease simulators, enabling personalised treatments and predictive medicine.

'The European Commission will provide a total of €496 million in funding for eHealth projects within its 7th Framework Programme,' explained Ilias Iakovidis, Deputy Head of the EC's ICT for Health unit. 'The goal is to strengthen the research activities surrounding eHealth applications, such as wearable systems for patient monitoring, immediate diagnosis and detection of public health threats. eHealth Week 2010 will provide a good opportunity to learn more about European Commission activities, as well as solutions, projects and initiatives from all over Europe.'

Details: www.worldofhealthit.org and www.ehealthweek2010.org
Sources: HealthTech Wire (www.healthtechwire.com) and the European Commissions' ICT Results

Scotland signs national IT framework contract

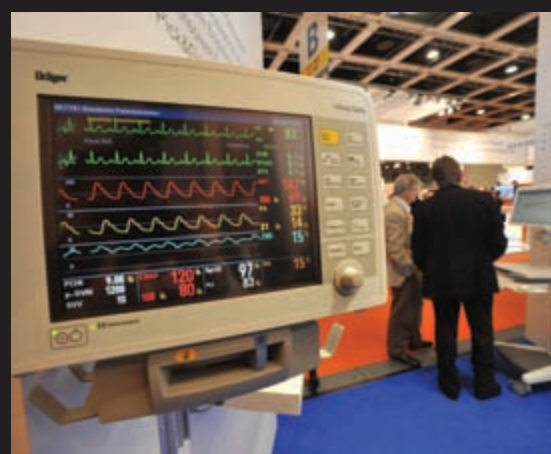


Scotland's National Health Service (NHS) has signed a national framework contract with InterSystems to replace its Patient Management System. 'This contract will enable Health Boards across Scotland to implement a single, nationally available patient management system that will play a major role in improving patient services,' explained Scotland's Health Secretary, Nicola Sturgeon. 'The system will track patient journeys from referral to discharge.'

Using InterSystems TrakCare (chosen by hospital staff from tenders), patient information will only need to be entered once to become immediately accessible by authorised staff in other hospital departments. Functions include general hospital patient administration with complex scheduling, clinical support tools, order communications functionality and results reporting.

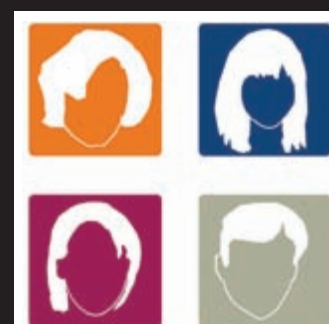
The contract is a national framework in line with the eHealth Strategy that will enable any Health Board access to the system and associated modules over the next four years. Initially the five Consortium NHS Boards involved will place contracts to the value of £44 million. These Boards, together with NHS Lothian, which already uses this system, care for 70% of the Scottish population. Additional NHS Boards are already in discussion about how this national framework can benefit them.

NHS National Services Scotland supported the Consortium by providing procurement services.



conhit 2010

20-22 April
Berlin, Germany



conhit

Der Branchentreff für Healthcare IT
20.-22. April 2010, Berlin
www.conhit.de

Organised by the German Medical Informatics Professional Association (BVMI), German Association for Medical Informatics, Biometry and Epidemiology (GMDS) and German Association of the Healthcare IT Industry (VHitG), conhit is one of Europe's leading healthcare IT events.

Dr Philip Rösler, the German Federal Health Minister, is this year's conhit

patron, and the keynote address at the opening will be given by State Secretary Stefan Kapferer.

There will be 12 congress sessions, involving national and international speakers (simultaneous translations: English and German), with a focus on opportunities that have resulted from innovative healthcare IT solutions.

Interactive seminars at the conhit acad-

emy will examine concrete solutions and novel approaches to selected topics from healthcare IT.

The event will also provide an expanded range of networking events. A large number of exhibitors (172 in 2009) will demonstrate their solutions and systems, and, for the first time, there will be guided tours around the exhibition highlights.

Details: www.conhit.de

TELEMEDICINE

Novel island home healthcare monitoring scoops Scottish award

A telemonitoring service introduced in the Isle of Bute, Scotland, has won this year's *Innovation and Improvement Scottish Health Award*.

Although Bute is only a 90 minute ferry and car journey to Glasgow, this is a long time in terms of health emergencies. Populated by less than 7,500 people, the island has benefited from a full Broadband service since late 2005. In January this year this proved an asset when a telehealth project began. Via a limited resources telehealth project run by NHS Highland in partnership with Argyll & Bute Council, which funded the project, and the private IT firm Telehealth Solutions, 15 Home Pods were installed to monitor COPD patients with others installed in the Rothesay Health Centre in the island's main town. The telehealth project has also included community halls and GP surgeries etc. Along with the Isle of Bute, the Isle of Luing and Oban have benefited from the project.

A patient at home uses a small touch screen to answer questionnaires that provide multiple choice answers, for example so that PHQ9 to detect and manage depression can be run at appropriate intervals. The system also has a multi-language option.

The patient's answers and vital signs are then transmitted to a secure server behind the NHS firewall. This analyses the data, instantly informing the appropriate care provider via



text, email or practice management system of any conditions outside previously-set limits. Feedback to patients is also immediate, including a graphing facility to show them the recent trend in their vital signs, to encourage compliance further. Home Pod's uses include:

- avoiding non-elective hospital admissions by monitoring long term conditions, such as CHF, COPD, diabetes, obesity, hypertension, and depression
- enabling early hospital discharge by permitting consultants to continue patient monitoring after they have gone home and to react immediately if their condition deteriorates
- reducing cancelled operations by ensuring patients using Warfarin, insulin and similar aids are stable before admission to hospital
- reducing hospice usage by helping terminally ill people to remain at home.

Any medical device with an electrical output can be added without the need for re-engineering, Telehealth Solutions adds. 'Standard peripherals include scales, blood pressure meter, pulse oximeter

and glucometer. Specialist devices include coagulometer, urine analyser and syringe pump. Communication is via encrypted wireless, for preference, so patients can normally be shown how to use it and then take it home without the need for specialist installation. The slim size means it can easily be taken when visiting friends, going to work, and on holiday (worldwide).'

The Home Pod comes with a standard range of protocols, including one for pain management; clinicians can create their own if they wish. Content is also being added so that, in addition to anxiety reduction, exacerbation and medication management, patient self-care is encouraged. Cognitive Behavioural Therapy can also be delivered if required, the IT firm points out.

Within weeks of going live the first unplanned hospital admission was averted and the initial evaluations of the scheme also suggest further admissions have been avoided. So far, high hospital costs have been saved as well as fees for out-of-hours emergencies and helicopter use. In



From left: Charles Lowe, Telehealth Solutions Product Manager, Lynn Garrett, NHS Highland Project Manager, Katrina Flannigan, Respiratory Nurse Specialist, Sheena Ferguson, Bute District Nurse (and telemed champion) and Maggie Clark, Long-Term Conditions Manager

addition, the manufacturer points out that this equipment is sturdy, low cost and not expensive to set up.

With the University of the Highlands and Islands, the project team will soon conduct a structured evaluation, after which their findings will be conveyed to other health authorities.

Jeremy Cummin, Executive Chairman of Telehealth Solutions pointed out that telehealth technology was proving its worth time and time again in remote and urban communities in Scotland. 'Our objective as a pioneering and progressive telehealth company is improved delivery of care through technology. Patient feedback has been very positive because the Home Pod is helping them to avoid going into hospital and also giving them the comfort of knowing their condition is being remotely monitored more closely.'

* The company also produces Surgery Pod for use in GP surgeries and, as Pharmacy Pod, for pharmacies.

Report: Brenda Marsh

Although billions are invested in healthcare information technologies (IT), hospital data centres may not be ready for the demand that more patients and digital information will create, according to a survey of hospital IT executives at small and medium hospitals in France, Germany, United Kingdom, USA, Canada and China.

During the Healthcare Enterprise Survey, conducted by HIMSS Analytics and sponsored by Dell, executives were asked to assess the readiness of their hospital data centres to support new information demands as reform initiatives, such as electronic patients' records (EPRs) and digital imaging become more pervasive. Results suggest that there will be challenges associated with scaling small and medium hospital data centres to meet these demands and to support technology efficiently at the point-of-care (POC) — the main strategic priority of hospital senior IT executives in almost every country.

The survey revealed that the hospital IT executives believe that EPRs, Health Information Exchanges (HIEs), capacity for storing digital images, needs of affiliated physicians and business intelligence will increase demand on their data centres by an average of 20-50% over the next two years.

While many small/medium hospitals anticipate they will increase IT spending next year, they also describe data centre challenges that Dell believes will make it difficult for them to manage new information demands efficiently. These challenges include a lack of standards, security, extended server refresh

The IT Tsunami

Unprepared small/medium size hospitals could be swamped in data problems

cycles and complexity created by a large number of servers and vendors and limited use of virtualisation.

Lack of data centre standards complicate necessary data sharing within and between hospitals. With refresh cycles of five years or more, small/medium hospitals rely on servers that are less efficient and cost more to run and manage as they prepare for a significant increase in data in the next two years.

Without aggressive adoption of virtualisation, hospitals that simply add servers and storage to their data centres, to meet increasing data demand, will end up perpetuating the complexity that already consumes a majority of their IT resources, leaving lower budgets for medical priorities.

Small/medium hospitals should now be preparing their data centres to handle strategic reform and healthcare priorities and for government leaders to consider the significant contribution these hospitals can make to an IT infrastructure that streamlines their entire operations.

Individual country concerns:

Germany

• **Newer Servers** - IT hospital executives are running fewer servers (average: 14) than their counterparts in all countries, except China, and refreshing them more frequently—

up to 50% refresh their servers every 3-4 years, whilst their counterparts in other countries refresh every five or more years.

• **Little Virtualisation** - 53% reported that they had not virtualised and only two-thirds said they will use virtualisation in the future. Dell believes this shows that small/medium hospitals are not fully utilising the higher performance capacity of their newer servers and are spending more time managing their servers. Concerns about data security are the biggest barrier to virtualisation in Germany.

• **Complexity is the Challenge** - Complexity of environments is the greatest IT productivity and scaling challenge in Germany.

Encouraging factors for the outlook of small/medium hospital data centres around the world include:

• **Growth of IT Budgets** - 75% of the hospital IT executives indicated that their IT budgets were likely to increase next year; only 8% thought they would decrease.

Action Plan

Based on the findings and its experience with large hospitals, Dell has recommended a six-point action plan to help small/medium hospitals improve the efficiency and scalability of their data centres.

• **Eliminate complexity** - Adopt

standards-based technology and an open and flexible architecture across the data centre in order to automate routine management tasks, simplify virtualisation to achieve optimal server and storage utilisation and lay the foundation for interoperability and information exchange within the hospital and across the healthcare system. Standardisation now will reduce maintenance costs, which consume a significant portion of IT budgets, and simplify scaling in the future.

• **Invest, but wisely** in more efficient and scalable systems and management tools that reduce maintenance costs and have scaling capacity. Dell points out that its PowerEdge Servers, powered by the Intel Xeon Processor 5500 Series processors, have significantly greater processing capacity than previous generations. 'They are easier-to-manage, virtualisation-ready and can provide a significant increase in performance over previous generation servers allowing hospitals to run more compute intensive databases and applications more efficiently. Regular server refresh can save money by reducing management overhead and reducing power consumption and cost.'

• **Virtualise now to prevent server and storage proliferation** - Accelerate server and storage virtualisation to scale efficiently, minimise maintenance costs and free up budget and IT resources for strategic HIT priorities. Use system management tools to simplify management of virtual environments.

• **Consider alternative models** - Look at SaaS models for applications likely to grow substantially,

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or with large bandwidth requirements— such as EPRs electronic systems. Also consider hosted application and data usage models for additional capacity as and when needed.

• **Automate routine management tasks** to free up IT resources for priorities. Dell said its factory-installs server images to eliminate manual configuration and reduce deployment and IT staff time. Also use servers with embedded management tools such as integrated controllers that monitor and manage performance from a single console.

• **Tier data effectively** to reduce hardware costs, secure data and meet data availability requirements.

Survey highlights and further information for small/medium hospitals: <http://www.eweek.com/dellhealthcare/enterprise/>.